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CONTENTS

[Most subjects are referred to below. Readers are recommended, however, to look through all the abstracts for items of more restricted interest. Information on many diseases may be found in various sections, such as Immunity, Therapeutics, etc. See also key to the arrangement of abstracts given in the January, 1943 issue].

DISEASES CAUSED BY BACTERIA AND FUNGI, **79-85.**

Streptococci, **79**; Mastitis, **79**; Anthrax, **80**; Tuberculosis, **80**; Paratubercle bacilli, **81**; Johne's disease, **82**; Corynebacterium infection, **82**; Swine erysipelas, **82**; Listerella infection, **83**; Pasteurella infection, **83**; Salmonella infection, **83**; Brucella infection, **84**; Anaerobic infection, **84**; Fungi, **85**.

DISEASES CAUSED BY PROTOZOAN PARASITES, **85-87.**

Trypanosomiasis, **85**; Trichomoniasis, **86**; Coccidiosis, **86**; Malaria, **86**; Anaplasmosis, **86**; Leptospirosis, **87**.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA, **87-91.**

General, **87**; Foot and mouth disease, **87**; Aujeszky's disease, **88**; Rabies, **88**; Pox, **89**; Influenza, **89**; Equine encephalomyelitis, **89**; Pustular dermatitis of sheep, **90**; Swine fever, **90**; Canine distemper, **90**; Virus diseases of birds, **90**; Various, **90**.

IMMUNITY, **91-92.**

PARASITES IN RELATION TO DISEASE [GENERAL], **92-93.**

PARASITES IN RELATION TO DISEASE [ARTHROPODS], **93-94.**

PARASITES IN RELATION TO DISEASE [HELMINTHS], **94-97.**

General, **94**; Trematodes, **95**; Cestodes, **95**; Nematodes, **96**.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS], **97-99.**

DISEASES, GENERAL, **99-100.**

Livestock diseases control in Spain, **99**; Brucellosis and Johne's disease in Russia, **99**; Diseases of horses, **99**; Reproductive diseases, **100**; Inherited diseases, **100**.

NUTRITIONAL AND METABOLIC DISORDERS, **100-104.**

Minerals, **101**; Vitamins, **102**.

PHYSIOLOGY AND ANATOMY, **104-107.**

Reproduction, **105**.

POISONS AND POISONING, **107-108.**

Carbon tetrachloride, **107**; Sulphonamides, **108**; Phenothiazine, **108**.

THERAPEUTICS AND DISINFECTION, **108-111.**

Sulphonamides, **108**; Protozoan diseases, **109**; Insecticides, **109**; Anthelmintics, **110**; Various, **111**.

HYGIENE AND PUBLIC HEALTH, **111-112.**

TECHNIQUE AND APPARATUS, **112-114.**

Bacteriological, **112**; Stains, **112**; Helminthological, **113**; Histological, **113**; Various, **114**.

REPORTS, **114.**

Great Britain, **114**; Northern Ireland, **115**; Eire, **115**; Australia, **115**; Canada, **115**; Trinidad, **116**; U.S.A., **116**; Egypt, **116**.

ANON., 109, 111, 113.
Aguilar, F. J., 95.
Alikaeva, A. P., 82.
Allen, F. M., 114.
Allen, R. W. See Luttermoser, G. W., jt. author, 95.
Ammelounx, A., 88.
Anderson, J., 105, 106.
Anderson, R. S. See Friedewald, W. F., jt. author, 97.
Andervont, H. B., 98.
Andrews, F. N. See Mayer, D. T., et al., jt. authors, 106.
Anthony, C. H. See Armstrong, W. H., jt. author, 90.
Armstrong, W. H., & Anthony, C. H., 90.
Australia. Live Stk Dis. Rep., 1940-41, 115.
Aust. vet. Ass. Symposium Tuberc. Test, 81.
Aver'yanov, K. K., 80.

Bachl, A., 79.
Badger, G. M., Elson, L. A., Haddow, A., Hewitt, C. L., & Robinson, A. M., 98.
Bailly, J. See Remlinger, P., jt. author, 88, *ter*.
Barrett, M. K., 98.
Basset, D. L., 113.
Bastalić, S., 83.
de Basterrechea Elorrieta, L., 80.
Bawden, F. C., & Kleczkowski, A., 92, *bis*.
Beck, 84.
Beck, A. B. See Underwood, E. J., et al., jt. authors, 101.
Becks, H., Ray, R. D., Simpson, M. E., & Evans, H. M., 106.
Bekker, J. H., & Tasman, A., 112.
Belić, M., 107.
Berringer, H.-J., 97.
Bertín, V. See Gasic, G., jt. author, 85.
Bessey, O. A. See Wolbach, S. B., jt. author, 102.
Biester, H. E. See Schwarte, L. H., jt. author, 83.
Blattner, R. J., & Cooke, J. V., 90.
Bodin, S. See Lehnert, E., et al., jt. authors, 82.
Boley, L. E., & Graham, R., 89.
Boynton, W. H., Woods, G. M., Wood, F. W., & Casselberry, N. H., 90.
Briton, N. W., & Paltridge, T. B., 108.
Brooks, 81.
Brunemann, J., 100.
Bryan, C. S. See Williams, L. F., jt. author, 79.
Burnet, F. M., 89, *bis*.
——. See also Foley, M., jt. author, 89.
Burtenshaw, J. M. L., 92.
Buttle, G. A. H. See Mitchell, G. A. G., jt. author, 111.
Buza, L., 80.

Canada. Rep. Ont. vet. Coll., 1940, 115.
Cánepa, E., & de Graña, A., 94.
Canetti, G. See Saenz, A., jt. author, 81.
Carlström, B., 101.
Carey, L. D., 109.
Casselberry, N. H. See Boynton, W. H., et al., jt. authors, 90.
Cawston, F. G., 95.
Chandler, A. C., 94.
Chu, H. I. See Liu, S. H., jt. author, 111.
Churchward, 81.
Cimino, N., & Vajna, G., 89.
Climenko, D. R., & Wright ,A. W., 108.
Cochet, G. See Coutelen, F., jt. author, 85.
Cole, H. H., & Hart, G. H., 105.
Cole, R. K., 98.
Cooke, J. V. See Blattner, R. J., jt. author, 90.
Coutelen, F., & Cochet, G., 85.
Cox, H. R., Philip, C. B., & Kilpatrick, J. W., 89.
—. See also Philip, C. B., et al., jt. authors, 89.

Dahmen, H., 110.
Dang-Van-Ngu. See Galliard, H., jt. author, 95.
Dann, W. J. See Handler, P., jt. author, 103.
Darrow, D. C. See Durlacher, S. H., et al., jt. authors, 101.
Davidsohn, I., & Toharsky, B., 91.
Day, P. L. See Totter, J. R., jt. author, 101.
Demnitz, A., & Dräger, K., 82.
Dettmann, E. O., 112.
Dimock, W. W., & Trum, B. F., 100.
Doerr, R., 87.
Doljanski, L., & Pikovski, M., 98.
Dosch, F., 112.
Dräger, K. See Demnitz, A., jt. author, 82.
Duffie, D. H., 114.
Durlacher, S. H., Darrow, D. C., & Winternitz, M. C., 101.

Ebbell, H., 101.
Eber, G., 96.
Ecker, E. E., Pillemer, L., & Kuehn, A. O., 91.
—, Weisberger, A. S., & Pillemer, L., 91.
—. See also Pillemer, L., et al., jt. authors, 91.
Eddie, B. See Meyer, K. F., et al., jt. authors, 84.
Egypt. Rep. Serum Inst., 1935-36, 116.
—. Rep. vet. Lab., 1935-36, 116.
—. Vet. Serv. Rep., 1935-36, 116.
Eichler, W., 93.
Eire. Rep. vet Offr, Dublin County, 1940, 115.
van Elsbergen, T., 81.
Elson, L. A. See Badger, G. M., et al., jt. authors, 98.
Elssel, F. W., 88.
Elvehjem, C. A. See McKibbin, J. M., et al., jt. authors, 101.
Ennor, A. H., 107.
Erskine, D., 108.
Evans, H. M. See Becks, H., et al., jt. authors, 106.
Ewing, H. E., Jr., 79.

Farid, A., 116.
Feng, L. C. See Fortuyn, A. B. D., jt. author, 95.
Findlay, G. M., 90.
Flynn, J. A., 115.
Foley, M., & Burnet, F. M., 89.
Folley, S. J., 106.
Forgeot, P., Halbron, P., & Lévy-Bruhl, M., 82.
Fortushnyĭ, V. A., 94.
Fortuyn, A. B. D., & Feng, L. C., 95.
Fountain, J. H. See Philip, C. B., et al., jt. authors, 89.
Friedewald, W. F., & Anderson, R. S., 97.

Galliard, H., & Dang-Van-Ngu, 95.
Gamaleya, N. F., 87.
Ganslmayer, R., & Winterhalter, M., 108.
Garrison, E. R. See Reineke, E. P., et al., jt. authors, 104.
Gasic, F., & Bertín, V., 85.
Gefter, V. A., 96.
Germany. Blackleg in Bavaria, 1941, 84.
Gingrich, W. D., 112.
Ginsberg, A., 111.
Glover, J. S. See McGilvray, C. D., jt. author, 115.
Götze, R., 105.
Gorkina, A. N., 109.
Graham, R. See Boley, L. E., jt. author, 89.
de Graña, A. See Cánepa, E., jt. author, 94.
Grant, J. C., 104.
Grau, H., 107.
Gt. Britain. Rep. Edinb. E. Scot. Coll. Agric., 1940-41, 114.
Groat, R. A., 113.
Grosso, A. M., & Prieto, C., 89.
Grupen, E. S. See Hamburger, M., et al., jt. authors, 109.

Haddow, A. See Badger, G. M., et al., jt. authors, 98.
Halbron P. See Forgeot, P., et al., jt. authors, 82.
Hamburger, M., Jr., Schmidt, L. H., Ruegsegger, J. M., Sesler, C. L., & Grupen, E. S., 109.
Hammond, J. See Hammond, J., Jr., et al., jt. authors, 106.
Hammond, J., Jr., Hammond, J., & Parkes, A. S., 106.
Hámori, D., 100.
Hanada, R. E. See Mettler, F. A., jt. author, 113.
Handler, P., & Dann, W. J., 103.
Hart, E. B. See McKibbin, J. M., et al., jt. authors, 101.
Hart, G. H. See Cole, H. H., jt. author, 105.
Hase, A., 93.
Hashimoto, N. See Torikata, R., jt. author, 92.
Haurowitz, F., & Schwerin, P., 92.
Hawking, F., 111.
Hayston, J. T., 84.
Henderson, H. O. See Moore, E. N., et al., jt. authors, 79.
Henry, M., 115.
Hewitt, C. L. See Badger, G. M., et al., jt. authors, 98.
Hewitt, R., 86.
Heynen, K., 88.
Hicks, J. D., 102.
Hill, C. McD., 86.
Hindmarsh, W. L., 85.
Hirsch, J., 108.
Hofmann, H., 96.
Hornig, G., 80.
Howell, G. C., 108.
Hsu, H. S. See Hsu, Y. C., jt. author, 97.
Hsu, Y. C., & Hsu, H. S., 97.
Hübler, R., 107.
Huizinga, H., & Winger, R. N., 86.
Hupka, E., & Merzdorf, G., 104.
Hurt, L. M., 116.

Ilazabal, L. L. See Suarez, J. G., jt. author, 83.
Ilić, T., 96.
Ingle, R. T. See Schofield, F. W., jt. author, 115.
Isle of Man. Rep. Anim. Administr., 1940, 115.
Iwanoff, S., 107.

Jakab, P., 101.
Jeffrey, F. P., 100.
Johnson, E. P., 86.
Jones, D. G., & Lamoreux, W. F., 105.
Jonsson, G. See Sjöberg, K., jt. author, 101.
Jung, M., 100.

Kästli, P., 79.
Kausche, G. A., 113.
Kilpatrick, J. W. See Cox, H. R., et al., jt. authors, 89.
Kleczkowski, A. See Bawden, F. C., jt. author, 92, *bis*.
Klimmer, 87.
Köbe, K., 114.
Komarov, N. M. See Kudryavtsev, A. A., jt. author, 114.
Korzenszky, L., 94.
Kotlán S., & von Mócsy, J., 96, *bis*.
—, & Vajda, T., 96.
Kremer, T. A. See Voĭvod, Y. P., jt. author, 84.
Ku, C. T., 95.
Kudryavtsev, A. A., & Komarov, N. M., 114.
Kuehn, A. O. See Ecker, E. E., et al., jt. authors, 91.
Kurtze, H., 82.
Kysela, W., 108.

Lamont, H. G., 115.
Lamoreux, W. F. See Jones, D. G., jt. author, 105.
Lamottke, E., 83.
van Landingham, A. H. See Moore, E. N., et al., jt. authors, 79.
Laporte, R., 81.
Lawson, T. L., 109.
Legg, J., 81.
Lehnert, E., Toll, H., & Bodin, S., 82.
Lehrke, K., 113.
Lendrum, A. C. See Lominski, I., jt. author, 85.
Lennox, F. G., 93.
Lentz, W. J., 110.
Leue, G., 99.
Lévy-Bruhl, M. See Forgeot, P., et al., jt. authors, 82.
Lewis, E. A., 94.
Lillie, R. D., 112.
—, & Roe, M. A., 112.
Liu, S. H., & Chu, H. I., 111.
Loeb, L., 98.

Lominski, I., & Lendrum, A. C., 85.
Love, W. G. See Stubbs, E. L., jt. author, 100.
Luttermoser, G. W., & Allen, R. W., 95.
Lyapustin, A. K., 109.
Lyons, C., & Owen, C. R., 84.

McCulloch, E. C., 110.
—. See also Nicholson, L. G., jt. author, 108.
McEachern, A. C. See de Vidas, J., jt. author, 111.
McGilvray, C. D., 115.
—, & Glover, J. S., 115.
McIntosh, R. A., 99.
McKenzie, F. F. See Mayer, D. T., et al., jt. authors, 106.
Mackerras, I. M., Mackerras, M. J., & Mulhearn, C. R., 86.
Mackerras, M. J. See Mackerras, I. M., et al., jt. authors, 86.
McKibbin, J. M., Schaefer, A. E., Elvehjem, C. A., & Hart, E. B., 101.
McManus, J. F. A., 107.
Makarova, A. V., 88.
Manchiamelo Genaro, J., 93.
Marcato, A., 95.
Martin, G. J., 103.
Martin, H. M., 85.
Martorana, N. F. See Tiffany, E. J., jt. author, 87.
Masiluñgan, V. A. See Tubangui, M. A., jt. author, 95.
Matthews, H. T., 111.
Maunder, J. C. J., 81.
Mayer, D. T., Andrews, F. N., & McKenzie, F. F., 106.
Medovy, H., 89.
Meier, E., 104.
Melroy, M. B. See Spencer, R. R., jt. author, 97.
Merzdorf, G. See Hupka, E., jt. author, 104.
Metivier, H. V. M., 116.
Mettler, F. A., & Hanada, R. E., 113.
Meyer, K. F., Eddie, B., & Yanamura, H., 84.
—. See also Yanamura, H. Y., jt. author, 84.
Meyn, A., 80.
Miller, E. W., & Pybus, F. C., 98.
Milzer, A., 90.
Miretskii, O. Y., 94.
Mitchell, G. A. G., & Buttle, G. A. H., 111.
von Mócsy, J. See Kotlán, S., jt. author, 96, *bis*.
Möhlmann, H., 88.
Moore, E. N., Henderson, H. O., van Landingham, A. H., & Weakley, C. E., Jr., 79.
Morgan, B. B., 86.
Morgan, W. T. J., & Partridge, S. M., 84.
Mornet, P., 85.
Moule, 81.
Mulhearn, C. R. See Mackerras, I. M., et al., jt. authors, 86.
Mulligan, R. M., 114.
Murányi, F., 80.
Murphy, J. B., & Sturn, E., 98.

Neumann-Kleinpaul, U., & Thiele, E., 104.
Newton, O. M., 100.
Nicholson, L. G., & McCulloch, E. C., 108.
Nielsen, E., & Elvehjem, C. A., 103.
Nordström, G., 87.
N. Ireland. Invest. vet. Res. Div., Min. Agric., 1941-42, 115.

O'Leary, J. L., Smith, M. G., & Reames, H. R., 90.
Owen, C. R. See Lyons, C., jt. author, 84.
Ozu, S. See Torikata, R., jt. author, 92.

Pallaske, G., 100.
Paltridge, T. B. See Briton, N. W., jt. author, 108.
Parkes, A. S. See Hammond, J., Jr., et al., jt. authors, 106.
Partridge, S. M. See Morgan, W. T. J., jt. author, 84.
Pecorella, F., 92.
Penn, G. H., Jr., 93, *bis*.
Petrova, E. F., 93.
Philip, C. B., Cox, H. R., & Fountain, J. H., 89.
—. See also Cox, H. R., et al., jt. authors, 89.
Pifano, F., 85.
Pikovski, M. See Doljanski, L., jt. author, 98.
Pillemer, L., Seifter, S., & Ecker, E. E., 91.
—. See also Ecker, E. E., et al., jt. authors, 91, *bis*.
Prieto, C. See Grosso, A. M., jt. author, 89.
Pybus, F. C. See Miller, E. W., jt. author, 98.

Quong, T. L., 89.

Radeff, T., 105.
Ransmeier, J. C., & Schaub, I. G., 83.
Ray, R. D. See Becks, H., et al., jt. authors, 106.
Reames, H. R. See O'Leary, J. L., et al., jt. authors, 90.
Reid, W. M., 95, *bis*.
Reineke, E. P., Garrison, E. R., & Turner, C. W., 104.
Remlinger, P., & Bailly, J., 88, *ter*.
Richter, G., 99.
Rita, G., 86.
Roberts, F. H. S., 93.
Robinson, A. M. See Badger, G. M., et al., jt. authors, 98.
Roderick, L. M. See Thompson, W. W., jt. author, 97.
Roe, M. A. See Lillie, R. D., jt. author, 112.
Roetti, C., 96.
Romboli, B., 97.
Rosenberger, G., & Slesić, M., 110.
Ruegsegger, J. M. See Hamburger, M., et al., jt. authors, 109.
Runge, S., 100.
Russ, S., & Scott, G. M., 97.
Ruttinger, A., 84.

Sachweh, P., 105.
Saenz, A., & Canetti, G., 81.
Sályi, G., 90.
Schaefer, A. E. See McKibbin, J. M., et al., jt. authors, 101.
Schalm, O. W., 79.
Schang, P. J., 87.
Schaub, I. G. See Ransmeier, J. C., jt. author, 83.
Schmidt, L. H. See Hamburger, M., et al., jt. authors, 109.
Schofield, F. W., & Ingle, R. T., 115.
Scholes, J. C., 83.
Schreiter, H. See Trautmann, A., jt. author, 107.
Schubbauer, A., 91.
Schwarte, L. H., & Biester, H. E., 83.
Schwartz, E., 93.
Schwarzmaier, E., 114.
Schwerin, P. See Haurowitz, F., jt. author, 92.
Scott, G. M. See Russ, S., jt. author, 97.
Sebrell, W. H. See Wooley, J. G., jt. author, 103.
Seelemann, M., 109.
Seiffert, G., 112.
Seifter, S. See Pillemer, L., et al., jt. authors, 91.
Senthille, F., 82.
—. See also Verge, J., jt. author, 80.
Sesler, C. L. See Hamburger, M., et al., jt. authors, 109.
Shearer, E., 114.
Shier, F. L. See Underwood, E. J., et al., jt. authors, 101.
Sibree, E. W., 104.
Silver, M. L., 113.
Simpson, M. E. See Becks, H., et al., jt. authors, 106.
Sjöberg, K., & Jonsson, G., 101.
Slesić, M. See Rosenberger, G., jt. author, 110.
Smith, M. G. See O'Leary, J. L., et al., jt. authors, 90.
Soboleva, N. I., 109.
Spain. Law Contr. Livestk Dis., 99.
Spencer, R. R., & Melroy, M. B., 97.
Steck, W., 79.
Still, J. L., 102.
Stubbs, E. L., & Love, W. G., 100.
Sturm, E. See Murphy, J. B., jt. author, 98.
Suarez, J. G., & Ilazabal, L. L., 83.
Summers, W. A., 113.
Swales, W. E., 110.

Tasman, A. See Bekker, J. H., jt. author, 112.
Tepper, A. E., 104.
Theelen, W., 106.
Thiele, E. See Neumann-Kleinpaul, U., jt. author, 104.
Thompson, K. W., 106.
Thompson, W. W., & Roderick, L. M., 97.
Tiffany, E. J., & Martorana, N. F., 87.
Toharsky, B. See Davidsohn, I., jt. author, 91.
Toll, H. See Lehnert, E., et al., jt. authors, 82.
Torikata, R., & Hashimoto, N., 92.
—, & Ozu, S., 92.
Totter, J. R., & Day, P. L., 101.
Traub, E., 90.
Trautmann, A., & Schreiter, H., 107.
Trinidad & Tobago. Rep. vet. Work, 1940, 116.
Trum, B. F. See Dimock, W. W., jt. author, 100.
Tubangui, M. A., & Masiluñgan, V. A., 95.
Turner, C. W. See Reineke, E. P., et al., jt. authors, 104.

Underwood, E. J., Shier, F. L., & Beck, A. B., 101.
U.S.S.R. Rep. Conf. Contr. Bruc. & Johne's Dis., 1939, 99.
U.S.A. Rep. Comm. industr. Anthrax, 1941-42, 80.
—. Rep. Div. Lab. Res., N.Y. St. Dep. Hlth, 1941, 116.
—. Rep. Los Angeles County Live Stk Dep., 1941-42, 116.
—. Rep. Secy Agric., 1941, 116.

Vajda, T. See Kotlán, S., jt. author, 96.
Vajna, G. See Cimino, N., jt. author, 89.
Vanderplank, F. L., 85.
Verge, J., & Senthille, F., 80.
de Vidas, J., & McEachern, A. C., 111.
Vogelsang, E. G., 92.
Voivod, Y. P., & Kremer, T. A., 84.

Wadsworth, A. B., 116.
Wagner, K., 114.
Weakley, C. E., Jr. See Moore, E. N., et al., jt. authors, 79.
Weger, G., 100.
Weisberger, A. S. See Ecker, E. E., et al., jt. authors, 91.
von Wendt, G., 103.
Wertheim, P., 95, *bis*.
Wildhagen, A., 111.
Williams, D. W., 96.
Williams, L. F., & Bryan, C. S., 79.
Williams, S., 84.
Winger, R. N. See Huizinga, H., jt. author, 86.
Winterhalter, M. See Ganslmayer, R., jt. author, 108.
Winternitz, M. C. See Durlacher, S. H., et al., jt. authors, 101.
Wirth, D., & Kubasta, F., 104.
Wolbach, S. B., & Bessey, O. A., 102.
Wolffram, N., 111.
Wood, F. W. See Boynton, W. H., et al., jt. authors, 90.
Woods, G. M. See Boynton, W. H., et al., jt. authors, 90.
Wooley, J. G., & Sebrell, W. H., 103.
Wright, A. W. See Climenko, D. R., jt. author, 108.

Yanamura, H. See Meyer, K. F., et al., jt. authors, 84.
Yanamura, H. Y., & Meyer, K. F., 84.

REVIEW ARTICLES

(1) **" Antibacterial Agents derived from Micro-Organisms."**

(2) **" The Present Position of Phenothiazine as an Anthelmintic."**

Reprints (price 1/- and 1/6 respectively) obtainable from :- Central Sales Branch (Imperial Agricultural Bureaux), Agricultural Research Building, Penglais, Aberystwyth.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin.*

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

Books for Review.

The Editor will be glad to receive books for review in the *Veterinary Bulletin.*

Bulletins on disease subjects written for farmers and " popular " articles of a similar nature are not included in the *Veterinary Bulletin.* Those of a sufficiently important nature, are, however, included in *Index Veterinarius* ; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius*, where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius*, being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin.*

NOTE.—In certain cases it is not possible to check references in the original publication. Such references are marked with an asterisk.

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VETERINARY BULLETIN

Vol. 13.] March, 1943. [No. 3.

DISEASES CAUSED BY BACTERIA AND FUNGI

WILLIAMS, L. F., & BRYAN, C. S. (1942). **A Study of the Fibrinolytic Properties of Lancefield's Group C Streptococci.**—*Cornell Vet.* **32.** 43–48. **501**

This study was undertaken in order to determine the possible value of the fibrinolytic test in separating "human" and "animal" type strains falling into Lancefield's group C. The technique is described in detail and certain pitfalls are indicated.

Str. agalactiae and *Str. uberis* failed to lyse human, horse, rabbit, sheep, goat, ox, or chicken fibrin, but horse fibrin was lysed by strains of streptococci of "animal" origin which fell into Lancefield's group C, but not by those in groups A and G.

With the exception of the figure for the final pH determined in 1% dextrose broth, biochemical reactions were of no help in separating those cultures which lysed human fibrin from those which lysed horse fibrin or neither of these.—N. S. BARRON.

BACHL, A. (1942). Beitrag zur elektiven Züchtung des Streptococcus agalactiae. [**Selective Cultivation of** *Str. agalactiae*].—*Wien. tierärztl. Mschr.* **29.** 409–410. [Only abst. given]. **502**

A medium composed of bovine whole blood with the addition of 0·2% glucose, 0·2% lithium chloride, 0·01% sodium azide and 0·000067% crystal violet is recommended as giving a good growth, and satisfactory inhibition of other types of bacteria.—J. G. CARR.

EWING, H. E., Jr. (1942). **The Relation of Flies (Musca Domestica Linnaeus) to the Transmission of Bovine Mastitis.**—*Amer. J. vet. Res.* **3.** 295–299. **503**

Following demonstration by feeding experiments that flies can carry *Streptococcus agalactiae* externally up to seven days and internally up to ten days, and that *Str. agalactiae* and pathogenic staphylococci are generally present on the external surface of the teat sphincter of mastitis cattle, a bacteriological examination was made of 3,700 flies trapped in a byre containing 65 cattle, 30 of which were affected with mastitis. No *Str. agalactiae* were found. Pathogenic staphylococci appeared in only five specimens. The results were probably influenced by the fact that the cows were milked elsewhere and were housed only for short periods.—D. D. OGILVIE.

MOORE, E. N., HENDERSON, H. O., VAN LANDINGHAM, A. H., & WEAKLEY, C. E., Jr. (1942). **Feeding as a Contributory Factor in the Development of Chronic Mastitis.**—*Amer. J. vet. Res.* **3.** 154–158. **504**

Attempts were made to determine whether feeding a heavy maize diet would influence the incidence of mastitis in a group of cows (14) as compared with a group of cows (12) receiving a normal ration. Using a group of eight cows, a heavy grain ration (other than maize) was fed and comparisons were made with eight cows receiving normal quantities of grain. In neither experiment was there a significant difference in the incidence of mastitis in any group.—D. L. HUGHES.

SCHALM, O. W. (1942). **Streptococcus agalactiae in the Udders of Heifers at Parturition Traced to Sucking Calves.**—*Cornell Vet.* **32.** 49–60. **505**

In an affected herd where calves were fed raw milk and allowed to suck each other the incidence of *Str. agalactiae* infection in down-calving heifers was 5·7%, whereas in another infected herd where calves were fed pasteurized milk and muzzled in the interim no heifers were infected at calving.

In order to determine the part played by sucking in the spread of infection, S. fed four calves 5–17 days old on infected milk for a period of seven months; a fifth calf, kept in isolation and fed only on uninfected milk, acted as control. Only one of these calved down with *Str. agalactiae* infection. The milk of two others contained staphylococci for a very short time and the fourth was normal. Unfortunately the control failed to breed.

Tests carried out to find how long *Str. agalactiae* remained in the mouth after ingestion of infected milk failed to reveal any of the organisms after 15 min. Other workers, using a cruder technique in which mouth swabs were streaked directly on to blood-agar plates, were able to detect the organism 45 min. after ingestion.

[Under the prevailing experimental conditions, the calves could have contracted infection quite as easily by ingestion of infected milk as through the act of sucking. Moreover MUNCH-PETERSEN *et al.* [*V. B.* **12.** 1.] detected *Str. agalactiae* in the faeces of seven out of 33 infected heifers showing that the organism can survive the passage of the bowel and so may conceivably get into the bloodstream.]—N. S. BARRON.

*1. STECK, W. (1942). Zur Methodik der Untersuchung von Einzel-milchproben auf Gelben Galt. [**Technique of Examining Single Milk Samples for Streptococcal Mastitis**].—*Scheiz. Milchztg.* No. 2. [Abst. from abst. in *Z. Fleisch- u.Milchhyg.* **52.** 128]. **506**

*II. KÄSTLI, P. (1942). Die Methodik der Untersuchung von Misch-milch auf Mastitis-Sekret. [**Technique of Examining Mixed Milk Samples for**

† Abstracts will be numbered serially throughout volume **13** of the *Veterinary Bulletin*, the numbers being printed in black type at the end of each title. These numbers will be used in giving cross references to abstracts which might equally well appear in more than one section of the journal.

Mastitis].—*Schweiz. Milchztg.* No. 2. [Abst. from abst. in *Z. Fleisch- u. Milchhyg.* **52.** 129]. **507**

I. S. considers the fermentation reaction to be the most reliable method of demonstrating *Str. agalactiae* in milk samples.

The mastitis streptococcus produces vigorous fermentation of saccharose, but has no effect on raffinose, mannite, inulin or sorbitol.

The value of cultural and serological methods of diagnosis is discussed.

II. K. reviews the conditions and methods used in Switzerland. The limitations of the mixed milk test are indicated, and K. concludes that it is of doubtful reliability for samples of over 50 litres, and samples should therefore be taken separately from each receptacle in a bulk consignment.—O. D. JAMES.

*I. MURÁNYI, F. (1941). [**Differentiation of the Anthrax Bacillus and its Variants from Similar Saprophytes on Culture Media**].—*Közl. Összehas. élet- és kórtan Köréből.* **29.** 465. **508**

*II. BUZA, L. (1941). [**Haemolytic Action of Anthrax Bacilli**].—*Ibid.* 459. **509**

[Absts. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 87].

I. Saprophytic bacilli resembling *B. anthracis* decolorized 4·5 ml. of broth containing 0·03 ml. of prontosil soluble in 48 hours, whilst *Bacillus anthracis* did not decolorize the same medium before 72 hours. Similarly, methylene-blue broth, containing 3–5 ml. of a 0·04% methylene-blue solution in 10 ml. of broth was decolorized by the saprophytes in 48 hours, but remained unaltered by *B. anthracis.*

Both tests are, however, valueless for the differentiation of anthrax strains of varying virulence.

II. This appears to cover the same ground as B.'s previous paper [*V. B.* **13.** 44].—M. LANDAU.

—. (1942). **Anthrax in Philadelphia. Report of the Committee on Industrial Anthrax.**—*Amer. publ. Hlth. Ass. Yearb. 1941–42.* pp. 114–116. Suppl. to *Amer. J. publ. Hlth.* **32.** No. 3. (1942). **510**

In the U.S.A. imported wools and hides are not required to be disinfected at the port of entry as they are in Great Britain.

Since the present war an increasing quantity of wool has been diverted to America and the incidence of anthrax from this source has shown a sharp increase.

In 1939 a survey of the incidence of anthrax in the U.S.A. for the 20 years ending 1938 was prepared, when the incidence of anthrax due to wool had increased from 3·2% of the total cases between 1919 and 1923, to 27·2% during the period 1929–33. This increase is attributed to cheap foreign wools being deflected to the U.S.A. rather than to Great Britain, owing to the charge which is made for disinfection in England.

During the past 2¾ years, 32 cases of anthrax have occurred in Philadelphia against 60 during the whole of the previous ten-year period, and infection from wool, previously of minor importance, has now become the greatest source of infection.

New York and New Jersey have also experienced an increase in the number of anthrax cases from wool.

The risk of anthrax from hides is considerably lessened by the fact that the process of tanning exercises a considerable lethal effect on the anthrax bacillus.

Since it is concluded that disinfection of wools and hides, on the lines practised in Great Britain, is not practicable during the war, vigilance must be increased with regard to the handling of materials likely to be infected and the prompt diagnosis and efficient treatment of affected persons. It is recommended that cases should be dealt with at a specially equipped centre under the charge of a specialist. This is the practice in Philadelphia where, out of 94 cases treated since 1929, only one case has proved fatal. Whilst anthrax antiserum is still regarded as a very valuable agent, neo-arsphenamine alone or in conjunction with serum is being increasingly used.

Of 34 cases recently treated in Philadelphia, seven received neo-arsphenamine alone and five in conjunction with serum. Only one death occurred and that in a patient treated with serum alone. It is stated that no single death has yet been reported in the U.S.A. following the use of arsenicals.—H. E. BYWATER.

AVER'YANOV, K. K. (1940). Ob epidemicheskikh vspyshkakh kishechnoĭ formy sibirskoĭ yazvy. [**Intestinal Anthrax in Human Beings after Consumption of Diseased Meat**].—*Zh. Mikrobiol., Moscow.* No. 8. pp. 35–44. **511**

A. observed an outbreak of anthrax in ten persons after the handling of meat and the consumption of sausages. Five were affected with the intestinal and five with the cutaneous form. Most of the cases were traced to the consumption of the carcass of a cow which was slaughtered on the third day of illness to salvage the meat. The carcass was inspected twice (soon after slaughter and at the market), but no laboratory examination was carried out.

There is discussion on infection of human beings from infected animals.

Statistics show a considerable decrease in the incidence of anthrax among human beings in the U.S.S.R., owing to active control measures.—A. M.

MEYN, A. (1941). Nachweis und Typendifferenzierung der Tuberkelbakterien. [**Demonstration and Type Determination of Tubercle Bacilli**].—*Berl. Münch. tierärztl. Wschr.* Dec. 26th. 607–612. **512**

A review of advances made during the past two decades in microscopical, cultural and biological methods of diagnosing TB.—J. E.

DE BASTERRECHEA ELORRIETA, L. (1942). Notas sobre "la tuberculosis bovina" en el Matadero de "La Ganadería Industrial Venezolana". [**Bovine TB. seen at Maracay Abattoir, Venezuela**].—*Rev. Med. vet., B. Aires.* **24.** 150–151. **513**

During a period of three months, 13,196 bovine animals were killed at the Maracay abattoir, and only 29 were found with tuberculous lesions. This is a very small percentage and the author concludes that bovine TB. in Venezuela is not a serious threat to the public health.—MILLER WATSON.

*HORNIG, G. (1941). Beiträge zum Verhalten der supramammären Lymphknoten bei der chronischen lobulär infiltrierenden Eutertuberkulose des Rindes. [**State of Supramammary Lymph Nodes in Chronic Lobular Infiltrating TB. of the Udder**].—*Inaug. Diss., Giessen.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 373]. **514**

The udders of 16 cows with mammary TB. were subjected to a detailed histological examination. In every case but one, the lymph node draining the affected quarter showed tuberculous lesions. In eight of the cows the lymph nodes of the healthy half were also affected. In addition to nonspecific inflammatory lesions, giant cells, caseation, and calcification were present in the lesions.—M. LANDAU.

VERGE, J., & SENTHILLE, F. (1942). Recherches sur la fréquence des différents types de bacilles tuberculeux dans l'infection spontanée du chat. [**Types of Bacillus in TB. of Cats**].—*Ann. Inst. Pasteur.* **68.** 114–117. **515**

The authors determined the type of infection in ten cats during the year May 1940 to May 1941, in Paris. All were infected by the bovine type of bacillus, probably after ingestion of tuberculous milk or ox lung.

The literature is reviewed and summarized in a table which shows that out of 126 cases, 120 were due to bovine type, and only six to human type tubercle bacilli. —J. E.

—. (1942). **Symposium on Tuberculin Testing Discussion by Australian Veterinary Association, Queensland Division.** [Speakers: LEGG, J., MAUNDER, J. C. J., CHURCHWARD, MOULE, & BROOKS].—*Aust. vet. J.* **18.** 176–178. **516**

As a result of testing 2,000 cows, all examined P.M., it is held that the single intradermal test, using synthetic medium tuberculin, is a great advance on all previous methods. The site of injection was the tail fold, or sometimes the perineal skin below the anus in bulls: it was examined for freedom from thickening or asymmetry before injection. Animals were examined 72 and 96 hours afterwards. The few which showed swellings that were typically diffuse, but small, at 72 hours were given particular attention at 96 hours; if the swelling had subsided, young animals were usually regarded as negative reactors, but this was not always so in old cows. If the swelling had not altered, young animals were classed as doubtful, and old ones as positive.

Of animals showing advanced disease P.M., about 60% had been positive reactors, and 40% negative or doubtful. Nearly 100% of animals in which the disease was well advanced and active had reacted well. As many as 30% of those with small lesions had been negative reactors.

Greatest problems were positive reactors with no visible P.M. lesions (now generally accepted as being infected), and negative reactors with generalized TB., especially the latter.

In calves some nonspecific swellings corresponding in size to that of a moderate positive reaction in adults were seen; swellings in positive reactions were usually quite large.—A. W. BANKS.

VAN ELSBERGEN, T. (1940). Antigene und allergene Wirkung einiger Tuberkulinpräparate verglichen mit BCG. **[Antigenic and Allergic Action of Some Tuberculin Fractions Compared with BCG].**—*Zbl. Bakt. I. (Orig.).* **146.** 70–79. **517**

Four products prepared by commercial firms, (1) a phosphatide fraction from tubercle bacilli (Behring), (2) a product from the cells designated "Restkörper L 461" (Behring), (3) an "old tuberculin" (Behring), and (4) a so-called "purified tuberculin" (Höchst) which, however, contained no protein, were compared with BCG. Complement fixation, skin reaction, and duration of survival of g. pigs after virulent infection were taken as criteria of antigenic, allergenic, and immunizing properties. The method of preparation of the fractions is not given in detail and the results are therefore of limited value. All four preparations showed less protective value than BCG. The phosphatide fraction showed no definite antigenic activity although unexplained late reactions followed subcutaneous injection in both normal and infected g. pigs. The "purified tuberculin" [a misnomer] and "L.461" elicited distinct formation of antibodies.—H. H. GREEN.

SAENZ, A., & CANETTI, G. (1940). Les propriétés pathogènes des bacilles tuberculeux morts, enrobés dans l'huile de vaseline et injectés par voie testiculaire. Leur apport aux notions de specificité et de virulence du bacille tuberculeux. **[Pathogenicity of Dead Tubercle Bacilli in Liquid Paraffin injected Intratesticularly. Significance in Relation to Specificity and Virulence of Tubercle Bacilli].**—*Ann. Inst. Pasteur.* **65.** 13–49. **518**

The authors describe the results of research into the pathogenic effects of dead tubercle bacilli and also the method of suspending them in liquid paraffin. It has been shown that dead tubercle bacilli injected in this way are capable of causing severe lesions at sites remote from the inoculation site.

G. pigs inoculated intratesticularly with dead tubercle bacilli of bovine, human, or avian type, in liquid paraffin, develop metastatic pulmonary lesions and may or may not die within a moderate period (30–60 days). The same effect is produced in rabbits, but in them the type of bacillus employed makes a difference in the severity of the lung lesions, bovine type being very, avian type moderately, and human type only slightly, virulent.

The lesions themselves closely resemble those caused by live tubercle bacilli. The route of inoculation plays an important but obscure role in the genesis of the above results.

If the liquid paraffin is injected separately intratracheally and the dead bacilli into the veins, testicles, or peritoneal cavity, the same type of lung lesion develops, even though the bacilli may be injected up to 30 days after the paraffin.

Live or dead BCG inoculated in the same way caused similar but somewhat less severe lesions.

The significance of these results is discussed with special reference to the role of liquid paraffin and of the intratesticular route, but the various theories still remain to be put to the test.—J. E.

LAPORTE, R. (1940–41). Contribution à l'étude des bacilles paratuberculeux. I. Propriétés pathogènes. II. Histocytologie des lésions paratuberculeuses. III. Propriétés toxiques et sensibilisantes. **[Study of Paratubercle Bacilli. I. Pathogenicity. II. Histopathology of Paratuberculous Lesions. III. Toxic and Sensitizing Properties].**—*Ann. Inst. Pasteur.* **65.** 282–325 and 415–434, and **66.** 284–319. **519**

I. L. reviews the position with regard to the nature and pathogenicity of so-called "paratubercle bacilli", this term including numerous strains of acid-fast bacilli of saprophytic habit which are incapable of causing natural progressive disease in animals but have occasionally been found, in association with slight local lesions, able to heal spontaneously. They have been isolated from such lesions and from many natural objects and do no more than cause small local lesions when inoculated in a relatively massive dose into experimental animals.

In association, however, with fatty or oily (adjectives used in a physical sense) substances and to a less extent with other foreign body irritants such as lycopodium powder, they become endowed with considerable pathogenicity and are able to multiply in the body and set up progressive, caseous TB.-like lesions. Experiments demonstrating this are described. The phenomenon is discussed [see also preceding abst.].

II. It has been known for many years that the lesions caused by paratubercle bacilli resemble essentially those caused by tubercle bacilli and differ only in degree. This holds good whether the bacilli are injected in saline or in fatty substances. A noteworthy fact concerning bacillus-fat association is the striking lung-tissue affinity and the relative insignificance of lesions set up in the liver, spleen, and kidneys. The lung lesion is characterized by rapid development with widespread necrotic broncho-alveolitis and a tendency to fibrosis and resembles TB. histologically, except for the fat deposit.

Examination of the peritoneal exudate after intraperitoneal injection of different strains of paratubercle bacilli, BCG, and virulent bovine type tubercle bacilli (in saline or fat) showed that the primary local reaction

was essentially the same for all the strains : in all cases there was a transient mononuclear leucocytosis followed by lymphocytosis which persisted or waned in accordance with the virulence of the infecting organism.

III. For the study of the toxicity of paratubercle bacilli, L. inoculated g. pigs with four relatively pathogenic strains. Heat-killed suspensions in saline were injected intracerebrally and intradermally. The former method resulted in an acute meningo-encephalitis varying in intensity with the strain and dose used, so that some animals died in a few hours and others survived after showing more or less slight symptoms of damage to the central nervous system. This method is suitable as a virulence test for paratubercle bacilli and as such is infinitely more sensitive than the intradermal method which caused a more or less severe dermatitis.

When repeated intravenous inoculations of paratubercle bacilli were made, certain delayed effects were observed to occur after a few weeks, taking the form of progressive pulmonary consolidation, and found P.M. to be due to a massive cellular infiltration of the air passages, together with blockade of the small blood vessels by histiocytes probably originating from the endothelial cells. This lung lesion might be fatal or result in resolution and healing. It is considered to be caused by toxin resulting from breakdown of the organisms.

Paratuberculins were prepared from the same four strains by filtration of old autolysed cultures, such as had been found to be very rich in proteins, and were tested on g. pigs infected with the same strains as well as in some infected with TB. and BCG. The results demonstrated group sensitization among all these organisms, although homologous filtrates gave qualitatively greater reactions. Animals infected by bacilli in liquid paraffin showed a more severe reaction than those receiving no paraffin.

In conclusion, L. emphasizes the importance of the host animal in all problems of infection and allergy by acid-fast bacilli. This host factor is very important, but is one in the knowledge of which little progress can yet be made.—J. E.

ALIKAEVA, A. P. (1941). Vydelenie chistykh kul'tur B. johne. **[Isolation of Pure Cultures of** *Mycobacterium johnei***].**—*Veterinariya, Moscow.* No. 2. pp. 15–23. [French summary]. **520**

For the cultivation of *Mycobact. johnei*, small pieces of mucous membrane obtained P.M., which had been preserved in glycerin for varying periods up to 3½ months, were treated with 10–15% sulphuric acid for 20–40 min. and washed in saline solution ; the surface was scraped, the scrapings were triturated and suspended in saline solution and the solid and semi-liquid media used by DUNKIN and by HOHN (substrate 4) [*V. B.* **12.** 178.], and also media A-1 and A-2 recommended by the author were seeded. Medium A-1 was composed of potato, egg, malachite green, and Long-Seibert solution ; medium A-2 consisted of egg, gentian violet and Long-Seibert solution. Subculture was also successful in liquid synthetic media of similar types, to which extracts of Timothy-grass bacilli grown on liver extract had been added.

Three strains of *Mycobact. johnei* were isolated and the pathogenic characters of one of the strains (strain 1) was tested. G. pigs and chickens, inoculated intravenously did not acquire infection. In rabbits generalized lesions were present, after 32–85 days, in the lungs, liver, and spleen, with well pronounced reactions of the reticulo-endothelial system and the formation of multiple nodules composed of endothelioid and giant cells. No necrosis was observed. The paper is illustrated by six photomicrographs.—A. MOLDAWSKY.

FORGEOT, P., HALBRON, P., & LÉVY-BRUHL, M. (1940). Pyobacillose généralisée mortelle chez un berger. **[Fatal Pyobacillosis in a Shepherd].**—*Ann. Inst. Pasteur.* **65.** 326–335. **521**

Case record of a shepherd who contracted a fatal generalized infection by *Corynebacterium pyogenes*. Clinical and bacteriological details are given. The fact that the patient had association with sheep lends interest to the development of the infection.—J. E.

SENTHILLE, F. (1941). Recherches sur le type respiratoire de l'espèce "*Corynebacterium pyogenes*" (var. *C. bovis*, B. de Poels et var. *C. suis*, B. de Grips). **[Respiratory Type of** *Corynebact. pyogenes* (var. *bovis* and var. *suis*)**].**—*Ann. Inst. Pasteur.* **66.** 78–82. **522**

In a study of *Corynebact. pyogenes* isolated from gangrenous lesions arising as complications to foot and mouth disease in cattle and swine, S. inoculated tubes of gelatin with and without 10% of horse serum. In all cases growth occurred only 8 mm. or more below the surface of the medium, in gelatin without serum as a haze of minute colonies in a band 8–12 mm. below the surface, and in gelatin with serum as scanty pinhead to lentil-sized colonies throughout the depth of the medium.

Oxidation-reduction potential studies were also made on the organism by the method of AUBEL & AUBERTIN [(1928). *C. R. Soc. Biol. Paris.* **98.** 957.] in tubes of gelatin containing methylene blue. Here also maximum growth was found to occur at a depth of about 10 mm., just below the bottom of the blue-coloured zone.

S. concludes that *Corynebact. pyogenes* is microaerophilic.—J. E.

KURTZE, H. (1942). Beziehungen zwischen dem Rotlauf der Schweine und atmosphärischen Spannungen. **[Connexion between Swine Erysipelas and Atmospheric Pressure].**—*Berl. Münch. tierärztl. Wschr.* Jan. 9th. 10. **523**

An interesting note relating to an outbreak of S.E. which occurred after a marked change in weather conditions. After many weeks of dry, cold weather, the wind veered 180°, blowing from the west and bringing rain. The barometer fell markedly but the temperature remained low. Within 24 hours numerous outbreaks were recorded over a wide area in both vaccinated and unvaccinated swine. After three days however, the enzootic ceased as suddenly as it had begun. Since the temperature conditions did not favour the development of the disease, but rather the reverse, the authors concluded that the only other factor, namely the sudden drop in pressure, must have caused a general lowering of resistance in the pigs throughout the area.

—N. S. BARRON.

I. DEMNITZ, A., & DRÄGER, K. (1942). Vorschlag für ein Prüfungsverfahren der zur Simultanimpfung der Schweine benutzten Rotlaufkulturen. **[Test Method for Use on Cultures of** *Erysipelothrix rhusiopathiae* **used for Antiserum-Live-Culture Inoculation against Swine Erysipelas].**—*Hoppe-Seyl. Z.* **274.** 149–156. **524**

II. LEHNERT, E., TOLL, H., & BODIN, S. (1942). Die Standardisierung des Schweinerotlaufserums. **[Standardization of Swine Erysipelas Antiserum].**—*Z. InfektKr. Haustiere.* **58.** 226–277. **525**

I. Although the potency of swine erysipelas antiserum is subjected to state control in Germany, no test is laid down for the cultures used in the culture-antiserum method of immunization. The authors investigated eight culture strains for their suitability, by testing their pathogenicity on mice, pigeons and swine, along with serum titre tests on the swine which were

immunized and then hyperimmunized in the usual way and finally killed and examined for specific lesions in the heart and joints. The eight strains showed marked differences and evidence of good pathogenicity in mice was no direct evidence of pathogenicity for pigeons and pathogenicity for mice and pigeons was not a good guide to pathogenicity for pigs. Most of the strains failed to produce a good titre antiserum before the hyperimmunization stage had been reached. The authors conclude that strains to be issued for immunizing swine in the field should be tested on mice, pigeons and swine, and that tests should be made on the latter for innocuity as well as for antibody-producing power.

II. The authors studied methods for standardizing swine erysipelas antiserum, using mice as the test animals. Antisera were tested against a highly potent antiserum in their possession. Cultures of *Erysipelothrix rhusiopathiae* and antisera to this organism were obtained from Denmark, France, and the U.S.A., and a culture was obtained from Japan. Preliminary work showed negligible differences between these strains and antisera.

Attempts to standardize culture potency largely failed, owing to inability to find the causes of variation in rate of growth in culture and in virulence, which were not narrowly linked to pH, nor to the exact composition of the broth medium used. Broth gave better results than other media. As an alternative method of standardizing the infective dose used in serum-protection tests, a new approach was made by the use of spleen tissue from lethally infected mice, instead of broth culture. It was found that graduated doses of spleen suspension gave reasonably even results in tests of the protective value of serum against virulent infective material. This method is therefore recommended in antiserum tests, and of course one standard serum of adequate potency is needed for the appraisal of newly prepared sera. The technique is described in detail.

While the Danish, French and American cultures had similar values in the virulence tests and were specific in relation to antisera to these strains and to the antiserum used as standard, these antisera had less protective value against the Japanese strain. This is evidence that serological multiplicity may exist in this bacterial species.—J. E.

SCHWARTE, L. H., & BIESTER, H. E. (1942). **Listerella Infection in Cattle.**—*Amer. J. vet. Res.* **3.** 165–176. **526**

The authors have met several outbreaks of disease in cattle, showing central nervous system disturbance, caused by *Listerella*. Attempts to transmit the disease showed that cattle were far more resistant than sheep or pigs. The causal organism lost virulence after repeated cultivation in artificial media, but its virulence could be restored by serial passage in rabbits. Infections of varying severity were reproduced in cattle; fatal cases occurred after intracranial inoculation. Intravenous inoculation resulted in a severe reaction of short duration followed by complete recovery. Similar fatal infections were produced in sheep and pigs by the intracranial route.

The bovine strains of *Listerella* were morphologically and culturally similar to those isolated from sheep and pigs.—D. L. HUGHES.

*LAMOTTKE, E. (1941). Seuchenkarte der Geflügelcholera für das Deutsche Reich. [**Fowl Cholera Maps for Germany**].—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 172.] **527**

A survey of this disease for the period 1925–39 as a base for future control.—Tj. BAKKER.

SUAREZ, J. G., & ILAZABAL, L. L. (1941). Epidemia de cólera en los patos marinos. [*Pasteurella aviseptica* **Infection in Puffins**].—*Rev. Med. vet., B. Aires.* **23.** 145–149. **528**

The authors report an outbreak of *Past. aviseptica* infection in puffins on the coast at Iquique, Chile. The disease reached epizootic extent and caused great losses amongst the birds, which are the main producers of guano. In most cases the disease ran a subacute course, and it is suggested that this is probably because infection was acquired from the water and the infective material was consequently diluted.

The authors consider that the shortage of food which affects these birds at certain seasons is a predisposing factor. They advise the setting up of a station to study the diseases of guano-producing birds, and the disinfection of the guano "grounds" to avoid further outbreaks.—MILLER WATSON.

RANSMEIER, J. C., & SCHAUB, I. G. (1941). **Direct Cultivation of Bacterium tularense from Human Blood Drawn During Life and at Autopsy. Report of Three Fatal Cases of Tularaemia, with Brief Notes on Two Others.**—*Arch. intern. Med.* **68.** 747–762. **529**

An account is given of three fatal cases of tularaemia in man. *Bact. tularense* was cultured directly from the blood during life in two cases, and from the blood of the cadaver in the third. In one case the organism was also obtained from the primary lesion, a pustule on the finger. Notes are included on two other fatal cases. The medium used in isolating the organism was blood-dextrose-cystine agar, and on some occasions blood-dextrose-sodium thioglycollate medium without methylene blue was also employed.—D. L. HUGHES.

SCHOLES, J. C. (1940). **The Relationship Between Body Temperature and Genetic Resistance to Salmonella Pullorum in the Fowl.**—*Thesis, Cornell.* pp. 86. **530**

Basing his opinion on the incidence of infection with *S. pullorum* among hens and on the observed resistance to *S. pullorum* among chicks, S. suggests that White Leghorns are more resistant to *S. pullorum* than are Rhode Island Reds and probably other heavy breeds.

He presents the following observations which he believes indicates that differences in body temperature are responsible for differences in the resistance of young chicks to *S. pullorum*:– (1) resistance to *S. pullorum* increases with increasing age; (2) body temperatures increase with increasing age; (3) White Leghorn chicks have higher body temperatures than do R.I.R. chicks; (4) body temperatures of White Leghorn chicks are less severely affected by cool environments than are those of R.I.R.'s; (5) reduction of body temperatures by lowering brooding temperatures or by injection with sodium amytal results in lowered resistance to the organism; (6) resistance is increased by artificial fever treatment; (7) chicks surviving an inoculation of *S. pullorum* have higher body temperatures than do susceptible chicks; (8) chicks which develop fever following inoculation with *S. pullorum* live longer than do chicks in which fever does not develop, and (9) there is a significant negative correlation between the body temperature of chicks of a given family and susceptibility of the family to *S. pullorum*.

A lowered body temperature followed an exposure of six-day-old chicks to 360 r units of X-ray. There were indications of injury to the intestinal mucosa and the liver. Tissue injury may have been responsible for the lowered resistance of chicks to *S. pullorum* following X-ray treatment observed by other workers.—H. L. G.

*BASTALIĆ, S. (1941). [**Allergic Diagnosis of Fowl**

Typhoid].—*Vet. Arhiv.* **11.** 343–390. [German summary]. [Abst. from abst. in *Berl. Münch. tierärztl. Wschr.* March 6th. 76. (1942)]. **531**

1,463 fowls were examined with three different allergens and by the agglutination test. B. concludes that allergic diagnosis in large flocks saves time but that non-reactors should be examined by the aggl. test as this is more accurate than the allergic test.—Tj. B.

MORGAN, W. T. J., & PARTRIDGE, S. M. (1942). **An Examination of the O Antigenic Complex of** *Bact. typhosum.*—*Brit. J. exp. Path.* **23.** 151–165. **532**

Antigenic material extracted from *Salmonella typhi* (strain O 901) by diethyleneglycol was resolved into its component parts. It was shown to possess the immunological properties of *S. typhi* somatic antigen, and to consist of a polymolecular complex of a specific polysaccharide, a protein, and a phospholipin. The protein was chemically and immunologically similar to the conjugated protein obtained from the O antigen of *Bacterium shigae.*

The toxicity of the preparation towards mice was associated mainly with the undegraded polysaccharide component. The degraded polysaccharide component prepared by acetic acid hydrolysis of the antigenic complex, and the protein component, were relatively non-toxic.—ISOBEL W. BURTON.

HAYSTON, J. T. (1942). **Observations on the Somatic Antigens of** *Salmonella cholerae-suis* **var.** *kunzendorf.* —*Aust. vet. J.* **18.** 172–174. **533**

Eight of 47 cultures of *S. cholerae-suis* var. *kunzendorf* isolated from diseased pigs in New South Wales possessed O antigens VI_2, and VII.—A. W. BANKS.

RUTTINGER, A. (1942). Agglutination, Meinicke-Reaktion und Komplementbindung nach Impfung mit verschiedenen Brucella-Antigenen. **[Agglutination, Meinicke's, and Complement-Fixation Reactions after Inoculation of Various Brucella Antigens].**—*Wien. tierärztl. Mschr.* **29.** 431–432. [Only abst. given]. **534**

Fourteen cattle were treated with various brucella antigens and the agglutination, complement-fixation, and Meinicke titres determined weekly for 6–7 weeks. Equivalent rises in all tests were found when living virulent bacteria, formol vaccine, endo-antigen from virulent bacteria, endo-antigen + Indian ink, and alumina adsorbate of endo-antigen had been used. The c.-f. test had the highest titre when the last of these antigens was used; the Meinicke test had the highest titre after the use of the formol vaccine. Culture in a medium containing bile increased all three titres, the c.-f. test and the Meinicke to the greatest extent. A suspension of dead bacteria from which most endo-antigen had been removed increased the aggln. and Meinicke titres, but not that for complement fixation. Living avirulent rough cultures had little effect on the complement fixation and aggln. titres, but increased the Meinicke titre to a marked extent.—J. G. CARR.

WILLIAMS, S. (1941). **The Occurrence of Lipoid Structures in Cultures of** *Streptobacillus moniliformis.* —*Aust. J. exp. Biol. med. Sci.* **19.** 255–259. **535**

The structures associated with the bacteria in cultures of *Str. moniliformis* (*Asterococcus muris*) were found to represent the myelin forms of lecithin. They are derived from the lipoids of the serum added to the media; if fat- and lipoid-free serum is used they are not formed, although the bacteria themselves grow well. —A. W. BANKS.

I. YANAMURA, H. Y., & MEYER, K. F. (1942). **Active Immunity to the Microbacterium Multiforme Psittacosis in the Mouse.**—*J. Immunol.* **44.** 195–209. **536**

II. MEYER, K. F., EDDIE, B., & YANAMURA, H. (1942). **Active Immunization to the Microbacterium Multiforme Psittacosis in Parrakeets and Ricebirds.**—*Ibid.* 211–217. **537**

I. It is shown that mice may be immunized successfully against psittacosis virus by the repeated intraperitoneal injection of relatively large doses of formalin-killed "*Microbacterium multiforme psittacosis*", grown for many generations on solid medium. The immunity in the experimental mice was variable and seemed to depend upon individual idiosyncrasy.

II. Formolized vaccines prepared from tissue culture and injected intramuscularly into parrakeets and ricebirds conferred a considerable degree of immunity, but did not completely protect individual birds against psittacosis. A test dose of virus equal to 100 mouse lethal doses invariably proved fatal to vaccinated birds. —J. C. BUXTON.

BECK. (1941). Rauschbrandschutzimpfung und Rauschbrandfälle in Bayern im Jahre 1940. **[Blackleg and Blackleg Vaccination in Bavaria in 1940].**—*Berl. Münch. tierärztl. Wschr.* April 18th. 199. **538**

Of 29,633 cattle vaccinated in Bavaria in 1940 against blackleg with muscle-powder vaccine, three developed the disease. Seven unvaccinated animals also developed infection: these were isolated cases. There was no disease as a direct result of or during vaccination.—D. L. ROBARTS.

—. (1942). Bayern: Rauschbrandschutzimpfungen und Rauschbrandfälle im Jahre 1941. **[Blackleg Vaccination and Blackleg in Bavaria in 1941].**—*Reichsgesundheitsblatt.* **17.** 438. [Also appeared in *Berl. Münch. tierärztl. Wschr.* July 24th. 232. (1942)]. **539**

Of 28,011 cattle in Bavaria vaccinated in 1941 against blackleg with muscle-powder vaccine prepared at Schleissheim, three developed the disease. No disease occurred as a direct result of, or during, vaccination.—D. L. ROBARTS.

LYONS, C., & OWEN, C. R. (1942). **Wilson-Blair Medium in the Rapid Diagnosis of the Clostridia of Gas Gangrene.**—*J. Bact.* **43.** 685–687. **540**

The Wilson-Blair medium for detecting typhoid-paratyphoid organisms in water and sewage was modified by THOMPSON [*Amer. J. clin. Path.* **9.** 173.] for the detection of clostridia. In this form it is a 0·5% glucose beef-infusion agar containing (in 10 ml. of medium) 0·1 ml. of 8% ferric chloride and 1·0 ml. of 20% sodium sulphite. Diffuse or localized blackening of the medium occurs around the sites of growth of certain clostridia.

The authors tested the medium with 66 strains of 18 species of *Clostridium*, five anaerobic non-haemolytic streptococci and four aerobic spore-forming Gram-positive bacilli. From their results they conclude that the technique is a useful diagnostic aid in the early recognition of the presence of certain clostridia in wound exudates or excised tissue, but that it does not distinguish between toxigenic and non-toxigenic strains of clostridia. They point out that "the diagnosis of life-endangering gas gangrene hinges upon the presence or absence of clinical toxaemia and is not dependent solely upon the presence of clostridia".—H. E. H.

VOÏVOD, Y. P., & KREMER, T. A. (1940). Primenenie reaktsii agglyutinatsii k smeshannym kul'turam dlya obnarwzheniya Bac. botulinus. **[Determination of** *Clostridium botulinum* **in Mixed Cultures by the Agglutination Test].**—*Mikrobiologiya, Moscow.* **9.** 383-394. [English summary]. **541**

The authors consider that, as a method for the detection of *Cl. botulinum* in foodstuffs, an aggln. test

can be used on mixed growths of the aerobes and anaerobes obtained in cultures from such material, the readings of course being made on the partial agglutination of the mixed variety of organisms obtainable in suspensions from such sources. Details are given of the work done on this "makeshift" test.—A. M.

HINDMARSH, W. L. (1942). **A Case of Bovine Vibrionic Abortion in New South Wales.**—*Aust. vet. J.* **18.** 175–176. **542**

The first known case of the disease in New South Wales is recorded. The animal, whose dam had been imported from Great Britain, had borne three normal calves. The herd's long freedom from genital diseases, and lack of contact with others, suggested that the vibrios may remain dormant on a property, or persist as a latent infection in an introduced animal and be transferred later to other cattle.—A. W. BANKS.

COUTELEN, F., & COCHET, G. (1942). Les rongeurs domestiques, réservoirs de virus en mycopathologie humaine et vétérinaire. **[Domestic Rodents, Carriers of Fungi which Infect Man and Domestic Animals].** —*Ann. Parasit. hum. comp.* **19.** 85–95. **543**

The authors report the isolation of *Candida albicans*, *C. parakrusei* and *C. brumpti* from the faeces of domestic rodents (rabbit, rat and g. pig) and thereby incriminate these animals as carriers of these fungi. The cultural characters are described.—J. E.

MARTIN, H. M. (1942). **Actinomycosis of the Dog and Cat.**—*Vet. Ext. Quart. Univ. Pa.* No. 87. pp. 15–19. **544**

It is pointed out that although actinomycotic lesions in cattle and swine occur more commonly about the head and mammary gland respectively, in the dog and cat lesions occur at a number of different sites. Three such cases in dogs and one in a cat are described in detail. In the dogs, lesions were present in the lungs and livers, in the tissues of the abdominal cavity, and also subcutaneously. In the cat there were lesions in the small intestines and adjacent tissues.—J. C. BUXTON.

LOMINSKI, I., & LENDRUM, A. C. (1942). **The Effect of Surface-Active Agents on** *B. proteus*.—*J. Path. Bact.* **54.** 421–433. **545**

In an effort to discover an agent which would efficiently prevent the swarming of *Proteus vulgaris* on solid media and at the same time permit the multiplication of such relatively delicate organisms as *Bacterium shigae* and streptococci, 55 surface active substances, including several soaps and various wetting and detergent agents, were tested, the experimental procedure being to add varying dilutions of the test substance to the 1·5% Lemco peptone agar upon which the organisms were plated.

A high anti-swarming titre for *P. vulgaris* associated with low toxicity for dysentery bacilli and streptococci was exhibited by sodium lauryl sulphate, sodium oleyl sulphate, sodium dioctyl sulphate (Aerosol O.T.), calsolene, dibutylphenyl phenol sodium disulphonate (Aresklene 375), alkylated aryl sulphonate (santomerse 7), and M565. The anti-swarming activity of these substances was over 30 times higher than that of bile salts, the ratio between anti-swarming and growth-inhibiting concentrations for *P. vulgaris* was ten times greater than with bile salts, and, an important practical point, the swarming of *P. vulgaris* was inhibited at concentrations from 20–70 times lower than those inhibiting the growth of susceptible pathogens.

The relationship between physico-chemical properties, activity, and mode of action of the test substances is discussed. [The sources and suppliers of the investigated substances are listed, most of them being compounds used in the dyeing and cleaning industries.] —J. LOCHIEL MCGIRR.

See also absts. **684, 685, 765** (mastitis), **680, 721, 722** (cocci), **740, 746** (TB.), **742** (salmonella), **655, 767, 770** (brucellosis, etc.), **743, 744, 745** (general).

DISEASES CAUSED BY PROTOZOAN PARASITES

VANDERPLANK, F. L. (1942). **Temperatures of Animals. [Correspondence].**—*Trans. R. Soc. trop. Med. Hyg.* **36.** 121–122. **546**

Referring to HORNBY's [*V. B.* **12.** 425.] criticism of his article [*V. B.* **12.** 16.] on the relation between the virulence of *Trypanosoma rhodesiense* and the normal blood temperature of its previous mammalian host, V. claims that all the temperatures were taken before 7 a.m. and that the air temperature was seldom above 23°C. The data have also been tested by statistical methods, and there are no significant differences between the mean temperatures of individual animals of the same species, whilst there are significant differences between the mean temperatures of each of the various species of animals listed by him. He contends that the mean temperature of the sheep under his observation, 103·4°F., is nearer to normal than the temperature of 102°F. given by HORNBY as the expected temperature of healthy sheep at Mpwapwa.—U. F. R.

GASIC, G., & BERTÍN, V. (1940). Epidemiologia de la enfermedad de Chagas en Chile. **[Epidemiology of Chagas' disease in Chile].**—*Rev. chil. Hig. Med. prev.* **3.** 5–28. **547**

The epidemiology of Chagas' disease in Chile is reviewed. The vector, *Triatoma infestans*, is found throughout the north, and the greater part of the centre, of the country. How far south it is found has not yet been ascertained. The proportion of triatomas infested is very high, being at least 40%.

Domestic dogs and cats are frequently infected with *Trypanosoma cruzi* and constitute the common reserves of the trypanosome in inhabited areas. Twenty-seven cases of Chagas' disease have been diagnosed microscopically by the authors, but by serological methods of diagnosis many more cases have been noted. —MILLER WATSON.

PIFANO, F. (1941). La enfermedad de Chagas en el estado Yaracuy, Venezuela. **[Chagas' Disease in the State of Yaracuy, Venezuela].**—*Gac. med. Caracas.* **48.** 201–206, 209–216, 220–227, 232–236 and 244–246. **548**

In his study of Chagas' disease in the State of Yaracuy, P. studied seven species of triatomid bugs, most of which are capable of transmitting *Trypanosoma cruzi*. The common species in houses is *Rhodnius prolixus* and a very high percentage of this species was found to be infected.

Among animals, natural infection was found in dogs, domestic cats, grey rats, bats, armadillos, opossums, and porcupines.—MILLER WATSON.

*MORNET, P. (1940). Un cas de leishmaniose canine au Niger. **[Leishmaniasis in a Dog in the Niger Province, French West Africa].**—*Bull. Soc. Path. exot.* **33.** 253–256. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **141.** 110]. **549**

Illness in a dog was diagnosed on clinical grounds as leishmaniasis, but the parasite was not demonstrated. The disease had not hitherto been seen in the Niger Province.—E. R. PARISER.

MORGAN, B. B. (1942). **The Viability of *Trichomonas foetus* (Protozoa) in the House Fly (*Musca domestica*).**—*Proc. helminth. Soc. Wash.* **9.** 17–20. **550**

In controlled experiments in which houseflies were fed on bacteria-free cultures of *T. foetus*, it was found that the organisms might survive in the digestive tract of the flies for ½–17 hours. Material regurgitated by flies 1–5 min. after feeding contained motile trichomonads; motile trichomonads could be detected in the faeces of flies for 2½–6 hours after ingestion, and for 8 hours if milk was also fed to the flies. All the control flies were free of trichomonads. It is considered that *M. domestica* may act as a disseminator of *T. foetus*, by regurgitating or defaecating on the genitalia of cattle after feeding on infected material.—U. F. RICHARDSON.

HUIZINGA, H., & WINGER, R. N. (1942). *Eimeria Wyomingensis*, **a New Coccidium from Cattle.**—*Trans. Amer. micr. Soc.* **61.** 131–133. **551**

A hitherto undescribed coccidium of cattle, named by the authors "*E. wyomingensis*", has been found in the vicinity of Laramie, Wyoming. The oocyst is ovoidal to elongated ovoidal, 37–45μ long and 26·4–30·8μ wide (40·3μ × 28·1μ average size). There is a narrow end with a conspicuous micropyle about 4·7μ in diameter. In dilute dichromate solution at room temperature, fresh oocysts sporulate in 5–7 days. The spores measure 19μ × 3μ.

Of the coccidia of cattle, only one, *E. bukidnonensis*, resembles this new species, the latter, however, being much smaller.

The authors consider that the coccidium described by CHRISTENSEN *et al.* [*V. B.* **10.** 246.] as *E. auburnensis*, may prove to be the same as *E. wyomingensis*.—J. E.

JOHNSON, E. P. (1942). **Further Observations on a Blood Protozoan of Turkeys Transmitted by Simulium Nigroparvum (Twinn).**—*Amer. J. vet. Res.* **3.** 214–218. **552**

JOHNSON *et al.* [*V. B.* **10.** 20.] described the transmission and stages in the life cycle of a blood parasite of turkeys that resembled *Leucocytozoon smithi*. From the present investigation, J. shows that gametocytes occur in the blood plasma and not within any of the blood cells. The evidence is supported by considerations of the relative sizes and longevity of erythrocytes and parasites. For similar reasons, the lymphocytes are not regarded as possible host cells. Birds which were infected, and which carried numerous gametocytes in the peripheral blood for several months, when screened from flies for a year showed no recurrence of gametocytes, in contrast to controls exposed to flies, thus showing that asexual reproduction does not occur in any tissue of the infected turkey. Oocysts were found to occur in the stomach wall of infected simuliid flies. The life-cycle of *L. smithi* as now understood is summarized.—C. HORTON SMITH.

HILL, C. McD. (1942). **Anemia as a Cause of Death in Bird Malaria.**—*Amer. J. Hyg.* **36.** 143–146. **553**

Pigeons infected with *Plasmodium relictum* differed considerably in their ability to withstand continued destruction of red blood cells by the parasites. Severe anaemia was always found when deaths occurred. To study the effect of the infection on the erythrocyte counts during disease and at death and to ascertain to what degree anaemia was developed, a study was undertaken of the blood of 12 pigeons from the beginning to the end of experimental infections. Counts were made each day to determine the number of uninfected cells per cu. mm. of blood as well as the numbers of parasitized and young r.b.c. present. In this series of 12 birds, eight succumbed to the infection and four recovered, *i.e.* the blood count returned to normal and the parasites had completely disappeared from the blood for one week or were only occasionally present to a fraction of 1%. It was concluded that anaemia due to reduction in erythrocytes was the immediate cause of death in the other eight birds.—C. HORTON SMITH.

RITA, G. (1940). Tentatavi di infezione dell'embrione di pokko con *Plasmodium gallinaceum*. [**Attempts to Infect Fowl Embryos with *P. gallinaceum***].—*Riv. Malariol.* **19.** 230–233. [English summary]. [Abst. from abst. in *Trop. Dis. Bull.* **38.** 714]. **554**

Attempts were made to infect chick embryos artificially with *P. gallinaceum* but no results were obtained, thus confirming the findings of other workers. Severe infections, however, could be produced in newly hatched chickens. The paper discusses the possible reasons which might account for the difference between the two cases.—C. HORTON SMITH.

HEWITT, R. (1942). **Studies on the Host-Parasite Relationships of Untreated Infections with *Plasmodium lophurae* in Ducks.**—*Amer. J. Hyg.* **36.** 6–42. **555**

Observations on the course of *P. lophurae* infections were made on about 300 ducks of different ages, weights, and breeds. Of 30 young ducks (4–7 weeks old), more than 75% died within 7–9 days after intravenous inoculation of approximately two thousand million parasites per kg. body weight. Infections ended fatally in 10–15% of about 250 adult ducks. Dosages varying between 2 and 30 thousand million parasites per kg. body weight were given to adult birds and, although the rise in parasite number was more rapid following the larger dose, the number of parasites present at the peak was not always greater than when a smaller dose was given; just as many deaths occurred when two thousand million parasites per kg. were inoculated, as when larger doses were administered. Since there are few records of the haematology of normal ducks, data concerning erythrocytes, total and differential leucocyte counts, and thrombocytes were obtained from about 100 ducks. As a result of infection with *P. lophurae* a fall in erythrocyte number and haemoglobin was noted, and it seems that the degree of anaemia is proportional to the number of parasites present. A marked drop in the erythrocyte count was noted when high parasite peaks were produced, with a return to normal within 2–3 days. During severe infections, binucleate and anucleate erythrocytes and deeply basophilic erythroblasts were seen. A relative increase in the heterophiles with ellipsoidal rods occurred in most cases. At the time that the parasite peak was reached, or just prior to death, 1–5% of heterophiles contained phagocytosed parasites. The rise in parasite number was accompanied by a lymphocytosis and sometimes by a monocytosis. The rectal temperature generally rose as the parasite number increased, but usually reached a crisis before the parasite peak occurred. Temperatures of 110°–112°F. were recorded. Subnormal temperatures usually preceded death or followed high parasite peaks. The length of the asexual cycle was about 36 hours. The parasite showed a very low synchronicity, but the time interval between the peaks and troughs of any one stage was about 36 hours.—M. L. BINGHAM.

MACKERRAS, I. M., MACKERRAS, M. J., & MULHEARN, C. R. (1942). **The Attempted Transmission of *Anaplasma marginale* Theiler by Biting Flies.**—*J. Coun. sci. industr. Res. Aust.* **15.** 37–54. **556**

Stomoxys calcitrans and *Tabanus circumdatus* were fed until the abdomen swelled on infected donor calves and then transferred to susceptible calves. Blood films of the latter were examined for 31–161 days, and then blood was injected intravenously into further susceptible

calves, some of which were later splenectomized. The calves were bitten 99–1,239 times each, the interval after the fly's feeding on the donor varying from 9 seconds to 42 days. Infectivity or susceptibility was verified by suitable inoculations of blood. In no case was transmission effected.

One of nine recipient calves became infected by repeated stabbing of donor and recipient alternately in the skin of the back with a needle ; in this case the time interval was 1–2 seconds, and the needle frequently drew blood. Other attempts, in which the needle was held in the air for 10 seconds, or was guarded so as to stab to a depth of 2 mm. only, failed.

The authors consider that the climate (latitude 35°S.) may have been unsuitable, or that the Australian strain of anaplasm is less virulent than American strains with which some workers have recorded successful transmission by biting flies.—A. W. Banks.

*Nordström, G. (1941). **[Leptospirosis in Domestic Animals]**.—*Nord. Med.* p. 1583. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 191]. **557**

Serological examinations were made for evidence of *Leptospira* infection in 616 dogs ill from a large variety of conditions. Of these, 57 gave positive reactions but only 13 of these 57 showed clinical symptoms of leptospirosis. There were two cases of granular contracted kidney, one case each of acute nephritis and haematuria, and three cases of nervous disturbance that probably were due to leptospira infection. Most of the remaining 36 [? 37] dogs had shown no noteworthy symptoms. Most of the infections had run a very mild course.

In the 13 cases in which leptospirosis was definitely diagnosed, *L. icterohaemorrhagiae* was the organism involved. *L. canicola* was also agglutinated but in lower dilutions of serum, and the illness in the case of these dogs was of the *L. icterohaemorrhagiae* type. Among the remaining 36 positive reactors, there were seven cases in which the titre for *L. canicola* was higher than that for *L. icterohaemorrhagiae*.

There was a significant increase in the frequency of serologically positive cases in the latter part of the year, as has also been observed in the disease in human beings. Diagnosis is not easy as icterus is not always present, but in acute renal disease with increased residual blood oxygen the urine should always be examined for leptospira. Symptoms of renal disease are often lacking and leptospira were found in the urine of only four of the 13 serologically positive cases. A positive blood test is unlikely to occur until four days after the appearance of symptoms. Serum therapy did not produce marked effects. Leptospirosis in foxes was found to be similar to the disease in dogs. It is stated that horses are susceptible to *L. icterohaemorrhagiae* infection and that the disease may be quite common in these animals.—A. L. Wilson.

Tiffany, E. J., & Martorana, N. F. (1942). **Leptospirosis in New York City. A Serological Survey.**—*Amer. J. Hyg.* **36.** 195–204. **558**

Weil's disease was first recognized in the U.S.A. in 1922, since when only about 100 cases of this disease have been recorded. It is concluded that illnesses are frequently labelled influenza, pneumonia, or enteric fever, etc., when they are actually cases of Weil's disease. This is probably due in some measure to the fact that jaundice occurs in only about half of the cases of this disease.

Blood samples from 1,351 individuals were examined by the agglutination test, according to the technique of Schüffner, for the presence of *L. icterohaemorrhagiae* antibodies. Of these, ten positive reactions giving a titre of 1 : 320 were from persons who worked in rat-infested surroundings ; eight had a history of past illness consistent with Weil's disease, whilst of 43 reactors with a positive titre of 1 : 160 or less, only three had had illness suspicious of the disease. Weil's disease had been diagnosed during illness in only two of the positive reactors. Although an agglutination titre of 1 : 1,000 or more is indicative of present or recent infection, any titre, however low, should raise suspicion of the disease.

No reaction for *L. canicola* was found in 59 people frequently in contact with dogs. The presence of antibodies of the typhoid group, of brucella or of the Wasserman antigen did not confuse the reactions with the leptospiral antigens.—H. E. Bywater.

See also absts. **723** (trypanosomiasis), **724**, **773** (piroplasmosis), **725** (leptospirosis).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

*Gamaleya, N. F. (1940). Virusnyĭ immunitet i teoriya blokady. **[Immunity to Viruses, and the Blockade Theory]**.—*Mikrobiologiya, Moscow.* **8.** 1182–1186. **559**

G. discusses immunity in virus infections, with special reference to the mechanism of viricidal antibodies. Immunity is, in his opinion, produced not by destruction or inactivation of the virus, but by blockade of the susceptible cells by viricidal antibodies, rendering them impermeable for the virus. It is supposed that viricidal substances are produced by " the virus itself, *i.e.* by the inclusion bodies " [*sic*]. An analogous blockade of cells probably occurs, in G.'s opinion, also in bacterial infection ; he refers to so-called " immunisins " (which he described in 1937), substances in antisera which probably play the same role as viricidal antibodies by blocking the susceptible cells and producing a local tissue immunity.—A. Moldawsky.

*Doerr, R. (1941). Die Infektion als Gast-Wirt-Beziehung mit besonderer Berücksichtigung der Tierpathogenen Virusarten. **[Infection as a Host-Parasite Relationship with Special Reference to Viruses Pathogenic for Animals]**.—*Arch. ges. Virusforsch.* **2.** 88–155. [Abst. in *Cancer Res.* **2.** 304, copied *verbatim*. Signed : S.-B.-J.] **560**

In this extensive review, section VII, entitled " Symbiosis and Infection ", contains a critical discussion of the relationship between latent infection of normal tissues and oncogenic viruses (pp. 131–134). The work of Rous, Andrewes, Doerr, and others is reviewed. No additional experimental material is presented on the problem of the possible relationship between viruses and tumors.

Klimmer. (1942). Ueber Virusarten. **[Viruses]**.—*Berl. Münch. tierärztl. Wschr.* June 12th. 182–183. **561**

A short survey of human, animal and plant viruses. The nature of viruses is briefly discussed.—J. Francis.

Schang, P. J. (1940). Los transmisores de la fiebre aftosa y el aislamiento de los focos de esta infección. **[Transmission of Foot and Mouth Disease and the Isolation of Primary Infective Localities]**.—*J. agron. vet., Univ. B. Aires 1939.* pp. 537–547. **562**

S. considers that insects and small wild animals and birds play only a very small part in the transmission of F. & M. virus in Argentina. He bases this opinion on the results of isolation experiments.

Whereas in Europe human beings may often carry the virus from place to place, this is unlikely to happen

in Argentina since most livestock is kept on large ranches where there is little movement on foot by human beings. In S.'s opinion the virus is spread by cattle on long treks, cattle sales, the custom of breeding cattle in one area and fattening them in another, and at cattle shows.

He found that convalescent animals were unlikely to spread the disease 10–15 days after recovery.—M. W.

*Ammelounx, A. (1940). Die im Gefolge der Maul- und Klauenseuche auftretenden Euterentzündungen, ihre Bedeutung, Ursachen und Bekämpfung. [**Udder Lesions Secondary to Foot and Mouth Disease**].—*Inaug. Diss., Giessen.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 374]. **563**

During the last epizootic of F. & M. disease in Germany the virus affection was frequently followed by severe mastitis. Other complications included suppuration of the claws and metritis. The organism most frequently isolated from these cases was *Corynebacterium pyogenes*, with various cocci and *Fusiformis necrophorus* less frequently present. Among factors predisposing to mastitis are mentioned inefficient milking resulting from primary, painful teat lesions and sudden "drying off" by the owner during the height of the epizootic.—M. Landau.

*Elssel, F. W. (1941). Die Ursachen der Todesfälle und Notschlachtungen beim Rindvieh im Verlaufe des MKS-Seuchenganges 1938/1939 im Landkreis Hannover. [**Causes of Death and Slaughter of Cattle in the 1938-39 Outbreak of Foot and Mouth Disease in the Hanover District**].—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 580]. **564**

A summary of the P.M. findings in 55 cattle which died from F. & M. disease in the acute phase and in 160 cattle slaughtered on account of chronic disability after passing through the disease. In the first group the predominant lesion was in the heart in 40 cases, in the feet in five, in the stomach and/or intestines in eight, and in the udder in two. In the second group there were heart lesions in 27, foot lesions in 95, stomach and/or intestinal lesions in 13, and udder lesions in 25. —E. R. Pariser.

Möhlmann, H. (1942). Ueber die Entwicklung der aktiven Immunität nach der Vakzinierung gegen Maul- und Klauenseuche. [**Development of Active Immunity after Vaccination of Cattle against Foot and Mouth Disease**].—*Z. ImmunForsch.* **101.** 269–277. **565**

The work was done in order to obtain exact data on the problem of how much virus the commonly used adsorbate vaccine should contain in order to produce the best immunity. Groups of g. pigs were vaccinated subcutaneously by the standard Riems technique with vaccines containing respectively 2·4, 0·24, and 0·024% of virus, and they were infected in the plantar pads from 6–40 days later with virus. The strongest vaccine had already conferred a strong immunity within six days and the medium strength vaccine by the 14th day, but the weakest vaccine had very little immunizing effect at any time between the 6th and 40th days. Repetition of the experiment with two further tenfold dilutions of virus added (*i.e.* five groups), revealed that vaccines containing these high dilutions of virus not only conferred no immunity but caused hypersensitivity to the infecting virus dose.

In discussing the significance of this finding, M. supposes that this phenomenon accounts for the proved uselessness of blood as a vaccine, because virus concentration in blood is so low.—J. E.

Heynen, K. (1941). Untersuchungen über den Nachweis und das Vorkommen der Pseudowut (Aujeszkyschen Krankheit) bei Schweinen in Deutschland. [**The Demonstration and Occurrence of Aujeszky's Disease in Pigs in Germany**].—*Z. InfektKr. Haustiere.* **57.** 179–200. **566**

In order to investigate the possibility that Aujeszky's disease occurs in swine in Germany, H. collected 3,000 samples of serum from slaughter pigs from 31 German abattoirs and conducted virus neutralization tests by Shope's g. pig method, the serum samples being pooled for convenience in lots of from 10–30. One lot only from Holstein contained virus-neutralizing antibodies and another lot from various sources gave doubtful results.

Full details are given of the technique used, including preliminary virus evaluation tests and estimations of the most suitable dose of serum to add to the standard virus dose.—O. D. James.

Makarova, A. V. (1940). Otchet o rabote pasterovskovo otdeleniya Stalingradskovo oblastnovo sanitarno-bakteriologicheskovo instituta za 10 let. [**Report on Ten Years' Work at the Pasteur (Rabies) Division of the Regional Bacteriological Laboratory at Stalingrad**].—*Zh. Mikrobiol., Moscow.* No. 8. pp. 79–84. **567**

From 1927–36, 9,710 persons applied for advice; 67 were epileptic cases and were given a course of treatment by rabies vaccination, the remaining 9,643 being persons bitten or having been in contact with suspected animals. The seasonal occurrence was at its highest between March and September. Vaccination was carried out on 5,912 persons, 4,074 of which were bitten by suspected animals and the remainder contaminated with saliva. In the majority the injuries were inflicted upon the lower extremities, then followed the hands, shoulders, forearms, head and rarest the trunk. The prevailing age group was between 26–50 years with a further peak at the 6–15 years group. Among 4,074 cases, 3,538 were bitten by dogs, 208 by cats, 6 by wolves, and 25 are stated to have been bitten by pigs, and 245 by cattle. Up to 1930, Pasteur's method of vaccination was used and was then replaced by Philipp's method. The number of injections varied from 7–30 according to the extent and situation of the injuries. During the whole period 14 vaccinated persons died from rabies.

As a measure of control between 1931–36, 16,434 errant dogs were caught, 1,189 of which were quarantined; 39 of these died of rabies.

In the six years up to 1940, the incidence of rabies in animals has gradually decreased. M. discusses the possibility of completely eradicating rabies from Russia and considers that this should be undertaken.—A. M.

I. *Remlinger, P., & Bailly, J. (1941). Les chiens naturellement réfractaires à la rage ne transmettent pas l'immunité à leur descendance. [**Dogs Naturally Resistant to Rabies do not Transmit Immunity to Their Progeny**].—*Bull. Acad. Méd. Paris.* **124.** 389–392. [Similar article appeared in **Pr. méd.* (1941). p. 388.] **568**

II. *Remlinger, P., & Bailly, J. (1941). Peut-on vacciner l'homme contre la rage au moyen de l'encéphale du chien mordeur? [**Can Human Beings be Vaccinated against Rabies with the Brains of Dogs which Bit Them?**]—*Ibid.* **125.** 107–111. **569**

III. *Remlinger, P., & Bailly, J. (1941). Contribution à l'étude de la rage consomptive. [**"Consumptive" Rabies**].—*Maroc méd.* Jan.-Feb. pp. 3–4. [Absts. from absts. in *Bull. Inst. Pasteur.* **40.** 169–171] **570**

I. Two pairs of dogs which were found to be endowed with natural absolute immunity against rabies

produced ten puppies which on test were found to be susceptible to rabies. The authors speculate on the nature of this phenomenon.

II. In the authors' opinion it is inadvisable to prepare vaccine for treatment of human beings from nervous tissue of natural cases. For an efficacious vaccine fixed, and not " street ", virus is necessary.

III. The authors draw attention to the existence of a natural form of rabies characterized solely by anorexia and rapid wasting. This form is very rare and can only be diagnosed by passages in rabbits, in which virulence increases during passage.

*CIMINO, N., & VAJNA, G. (1940). Il comportamento della glicemia nella rabbia sperimentale dei conigli. **[Blood Sugar of Rabbits with Rabies].**—*G. Batt. Immun.* **24.** 659–664. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **140.** 340]. **571**

The blood sugar of rabbits infected with fixed rabies virus increased during the pre-paralytic period and fell during the final stage.

BOLEY, L. E., & GRAHAM, R. (1942). **Studies on Cowpox. II. A Note on the Longevity of Vaccinia Immunity in Cattle.**—*Cornell Vet.* **32.** 335–336. [For part I, see *V. B.* **12.** 413]. **572**

In the previous paper a natural outbreak of cowpox was described, material from which did not transmit the disease after inoculation by scarification of the caudal fold of healthy cattle. An attempt to propagate it by inoculating a sterile filtrate on to the chorio-allantoic membranes of ten-day-old chick embryos was unsuccessful. Observations during the second year are now recorded. Eighteen animals remained resistant to vaccinia [human small-pox virus modified by passage through laboratory animals] two years after they had received artificially a dose of the above virus. None of the animals that had been naturally affected with cow pox or that had been exposed artificially to infection with vaccinia virus displayed the symptoms of natural cow pox. A newly purchased animal became infected and scab-lesion material showed the same peculiarities as in the previous outbreak. Animals which recovered from natural cow pox proved susceptible to vaccinia virus, indicating that the two viruses are immunologically unrelated.—S. J. GILBERT.

GROSSO, A. M., & PRIETO, C. (1939). Epiteliosis contagiosa de los canarios. **[Canary Pox].**—*Inst. Enferm. infecc., Fac. Agron. Vet., Univ. B. Aires.* **1.** No. 4. pp. 19. **573**

The authors studied canary pox in naturally and artificially infected birds. The virus isolated by them was very virulent and was 100% fatal in skin-affected cases.

Pigeons and fowls were artificially infected and developed typical lesions with Bollinger bodies, but the disease was benign and did not spread to other regions of the body. Sparrows were refractory to artificial infection.—MILLER WATSON.

FOLEY, M., & BURNET, F. M. (1941). **Complement Fixation in Influenza with Embryo Fluid as Antigen.** —*Med. J. Aust.* Oct. 25th. 468–470. **574**

Pooled amniotic and allantoic fluids of chick embryos infected with human type influenza virus by the amniotic route and incubated for 12 days, were an excellent antigen for complement-fixation tests, requiring only centrifugation for 10 min., and showing no anti-complementary activity. Antigen obtained after three days' incubation was slightly more potent than two- or four-day incubated fluid.

In human volunteers the appearance of complement-fixing antibody was a more delicate index of infection than a rise in neutralizing antibodies, though following infection the titre of complement-fixing antibody fell much more rapidly.—A. W. BANKS.

BURNET, F. M. (1941). **Influenza Virus "A" Infections of Cynomolgus Monkeys.**—*Aust. J. exp. Biol. med. Sci.* **19.** 281–290. **575**

Cynomolgus monkeys (*Macaccus irus*) are susceptible to infection with influenza strains when high-titre material is given intratracheally. Two monkeys developed neutralizing antibodies against swine influenza virus after repeated intratracheal inoculation of human strains.

Limited experiments indicated that recovery from intratracheal infection with active virus, or the subcutaneous inoculation of living virus, gave effective immunity, while subcutaneous inoculation of formalinized virus, or intranasal instillation of active virus, did not.—A. W. BANKS.

BURNET, F. M. (1941). **Growth of Influenza Virus in the Allantoic Cavity of the Chick Embryo.**—*Aust. J. exp. Biol. med. Sci.* **19.** 291–295. **576**

Following direct inoculation into the allantoic cavity of chick embryos 10–12 days old, free multiplication of any human influenza virus (A or B) occurs in the entodermal cells lining the cavity, and this does not apply only to virus adapted to mouse or egg passage. The highest content of living virus in the allantoic fluid is reached after two days' incubation, but after seven days the fluid still has good immunizing powers.

This is much the simplest available method of obtaining large amounts of sterile, high-titre virus from any (human) strain. One embryo yields up to 10 ml. of fluid, of which 0·01 ml. will immunize a mouse effectively.—A. W. BANKS.

I. QUONG, T. L. (1942). **The Pathology of Western Equine Encephalomyelitis. 18 Human Cases, Manitoba Epidemic, 1941.**—*Canad. publ. Hlth J.* **33.** 300–306. **577**

II. MEDOVY, H. (1942). **Western Equine Encephalomyelitis in Infants.**—*Canad. publ. Hlth J.* **33.** 307–312. **578**

I. A description of the autopsy of 18 cases of human infection with the virus of Western E.E. The salient features are given in a table.

II. A clinical report on a study of 19 cases of Western E.E. in human infants. There is a discussion on the importance of laboratory diagnosis in this infection.

I. PHILIP, C. B., COX, H. R., & FOUNTAIN, J. H. (1941). **Protective Antibodies against St. Louis Encephalitis Virus in the Serum of Horses and Man.** —*Publ. Hlth Rep., Wash.* **56.** 1388–1391. **579**

II. COX, H. R., PHILIP, C. B., & KILPATRICK, J. W. (1941). **Susceptibility of Horses to St. Louis Encephalitis Virus.**—*Ibid.* 1391–1392. **580**

I. The serum of seven of 19 human cases of encephalitis contained antibodies against St. Louis encephalitis. That of one case neutralized western equine encephalomyelitis virus. Serum from one case of poliomyelitis failed to neutralize either virus. Serum from one of five family contacts to encephalitis protected against St. Louis virus, serum from three physicians failed to protect against either virus, and serum from four of six veterinarians protected against St. Louis virus but none against Western E.E. virus. Five of seven horse sera protected equally against St. Louis and Western E.E. viruses. Two protected against St. Louis virus only. Serum of two of five horses without a previous history of encephalitis protected against both viruses; that of all of six recovered horses neutralized both viruses.

II. In two of three horses, intracerebral injection of 330,000 mouse M.L.D. of St. Louis virus produced

symptoms similar to those of Western E.E. The serum of the third animal possessed natural antibodies against St. Louis virus.—D. D. OGILVIE.

O'LEARY, J. L., SMITH, M. G., & REAMES, H. R. (1942). **Influence of Age on Susceptibility of Mice to St. Louis Encephalitis Virus and on the Distribution of Lesions.**—*J. exp. Med.* **75.** 233–245. **581**

A series of experiments designed to test the susceptibility of mice to St. Louis encephalitis virus showed that young mice up to three weeks of age were more susceptible than older ones when virus was inoculated intraperitoneally. There was, however, no significant age difference in susceptibility of mice inoculated intracerebrally or intranasally.—J. C. BUXTON.

BLATTNER, R. J., & COOKE, J. V. (1942). **The Use of the Egg Protection Test for the Recognition of St. Louis Encephalitis in Man.**—*J. infect. Dis.* **70.** 226–230. **582**

The authors refer to their previous papers [*V. B.* **10.** 884, and **13.** 73.] describing a method of vital staining with trypan blue of virus lesions growing on the chorio-allantoic membrane of the developing hen's egg.

In this paper the method is used in investigating St. Louis encephalitis and in demonstrating the presence of protective antibodies in serum, using the *in vitro* serum-virus technique. The passive protection of living cells with immune serum prior to inoculation with virus is thus demonstrated. Results are clarified by photographs and tables. It is emphasized that the egg protection test is simple and economical and, as well as being of value in the diagnosis of individual cases, may also be used in epidemiological studies of the disease. —J. C. BUXTON.

SÁLYI, G. (1939). Adatok a juhok ragadós hólyagos bórgyulladásának kórszövettanához. [**Histological Data on Contagious Pustular Dermatitis of Sheep**].—*Állatorv. Lapok.* **62.** 329–331 and 335–337. **583**

S. confirmed that the histological changes in contagious pustular dermatitis resemble those in variola. He also observed typical cell inclusions in the cytoplasm of the epithelial cells of the pustules which differed only by their acidophile reaction from Guarnieri's bodies. The cell inclusions could only be observed in the early stage (4th–6th day) of the exanthema. This may explain why no cell inclusions have been found by other workers.—J. CSONKA.

BOYNTON, W. H., WOODS, G. M., WOOD, F. W., & CASSELBERRY, N. H. (1942). **Cell Changes in Gall Bladder As an Aid in the Diagnosis of Hog Cholera.** —*Vet. Med.* **37.** 288–290. **584**

It is claimed that the mucous membrane of the gall bladder of pigs infected with swine fever may be distinguished histologically from that of the gall bladder of normal pigs. In cases of S.F., it is stated that the nuclei of both epithelial and glandular cells stain very deeply, the former containing what appear to be magenta-staining "inclusion bodies". The corresponding nuclei in preparations from healthy pigs, or from pigs affected with a variety of other pathological conditions, are said to have given consistently different results, failing to take the stain readily and containing a stringy mucus-like material not found to any appreciable extent in S.F. cases.—ALASTAIR N. WORDEN.

ARMSTRONG, W. H., & ANTHONY, C. H. (1942). **An Epizootic of Canine Distemper in a Zoological Park.** —*Cornell Vet.* **32.** 286–288. **585**

The epizootic commenced in a unit of Canidae and Felidae in the National Zoological Park, Washington, D.C. Only canine species were affected and a spread of infection occurred to a neighbouring unit of Canidae. The disease appeared to have been introduced by a raccoon dog which had been purchased from an animal dealer in New York City. Characteristic symptoms occurred and diagnosis was considered to be established, as typical distemper inclusion bodies were demonstrated in stained bladder smears and tissue sections. A ferret inoculated with spleen material died in 14 days of acute distemper and two five-month-old setters developed a mild infection and recovered within one month. After prophylactic treatment with commercial distemper antiserum, no new cases occurred. The affected animals included the red fox, grey fox, kit fox, raccoon dog, and Australian dingo.—S. J. GILBERT.

TRAUB, E. (1942). Eine atypische Form der Geflügelpest in Hessen-Nassau. [**An Atypical Form of Fowl Plague (possibly Newcastle Disease) in Hessen-Nassau**].—*Tierärztl. Rdsch.* **48.** 42–45. **586**

A disease resembling fowl plague broke out in a small flock in Hessen-Nassau without spreading further. A formolized vaccine prepared from chick-embryo cultures gave full protection against the Hessen-Nassau virus but not against fowl plague. This, and the typical clinical respiratory disorders made T. suspect Newcastle disease. The diagnosis could not be confirmed, however, as a typical virus of Newcastle disease for use in comparative experiments, could not be obtained owing to the war.—TJ. BAKKER.

ZAVAGLI, V. (1941). Della considetta laringotracheite dei polli. [**Avian Laryngotracheitis**].—*Ann. Igiene (sper.).* **51.** 640–648. **587**

A clinical study of avian laryngotracheitis, which appeared in Lombardy in September, 1940. Unsuccessful attempts were made to immunize fowls.—J. E.

FINDLAY, G. M. (1942). **The Localization of the Neurotropic Strain of Yellow Fever Virus in the Central Nervous System.**—*Trans. R. Soc. trop. Med. Hyg.* **36.** 21–24. **588**

Under normal conditions the virus of yellow fever inoculated intraperitoneally into fully grown mice, does not invade the c.n.s. F. found that if the animals were starved and then rendered hypoglycaemic by an injection of insulin, localization of the virus in the brain was readily secured: thus 32 out of 42 treated animals developed encephalomyelitis as compared with one out of 49 controls.

Since a similar result was produced by sublethal coal-gas poisoning, it is suggested that the virus reached the c.n.s. because the blood-brain barrier had been damaged by a deficiency of oxygen.—R. E. GLOVER.

MILZER, A. (1942). **Studies on the Transmission of Lymphocytic Choriomeningitis Virus by Arthropods.** —*J. infect. Dis.* **70.** 152–172. **589**

A series of experiments was undertaken on the transmission of the virus of lymphocytic choriomeningitis of human beings by various arthropod vectors. The experimental animals used were g. pigs, mice, and monkeys. The observation of COGGESHALL [(1939). *Science.* **89.** 515.] on transmission by *Aëdes aegypti* was confirmed. It was found that mosquitoes which had fed on infected animals needed to be incubated at 26°–34°C.; positive results were secured up to the 38th day. The virus was also transmitted by *Atricholaelaps glasgowi* (a blood-sucking mite) and *Eupedicinus longiceps* (louse of rhesus monkeys); unlike *A. aegypti*, infection was carried by these vectors at temperatures below 25°C. *Culex pipiens* and *Aëdes albopictus* failed to transmit the virus. Positive results were also obtained with the human bed bug, *Cimex lectularius*. In one instance the virus was passed from an infected mouse to g. pigs by bed bugs after 16 days; transmission from g. pig to

g. pig by bed bugs occurred mainly through faeces dropped on the bitten area, the faeces themselves being infective up to the 85th day. Direct transmission by interrupted feeding of the bug was only possible when the interval between feeds was 10 min. or less. Transovarian passage was detected in one instance out of three. —R. E. GLOVER.

See also absts. **709** (diagnosis of virus diseases), **753** (technique).

IMMUNITY

SCHUBBAUER, A. (1941). Die Formol-Gelatinierungsreaktion des Blutes bei verschiedenen Krankheiten der Pferde. **[Formol-Gel Reaction with Blood in Various Diseases of Horses].**—*Wien. tierärztl. Mschr.* **28.** 506–507. [Abst. only given]. **590**

The optimal proportions for the reaction were 2 drops of formalin diluted 1 : 1 in water to 1 ml. or 20 drops of serum. Formation of a gel in 24–48 hours is a positive reaction. The reaction was performed on 180 horses with various illnesses. The results in each type of disease are given. Positive results were usually found in diseases of suppurative character. The test was not demonstrated to be of any real value.—J. G. C.

DAVIDSOHN, I., & TOHARSKY, B. (1942). **Bacteriogenic Hemagglutination. II.**—*J. Immunol.* **43.** 213–225. [For part I, see *V. B.* **12.** 200]. **591**

Further study was made of the haemagglutinating properties of serum or plasma which had been inoculated with a 48-hour culture of *Corynebacterium H*, closely related to but not identical with *Corynebact. liquefaciens*, or with a ten-day culture filtrate. Estimations made with a glass electrode Beckman potentiometer showed that the haemaglutinating properties produced were unrelated to changes in the pH of the serum or plasma. The serum or plasma fraction essential for haemagglutinin formation was destroyed by heating at 65°C. for 10 min. The addition of yeast or vitamin B fractions favoured the production of bacteriogenic haemagglutinins in serum or plasma inoculated with *Corynebact. H*, but not with *Corynebact. H* culture filtrate. The agglutinogenic fraction of the serum was partly or completely exhausted in the course of haemagglutinin formation. A further demonstration was given of the independence of normal t-agglutinins and the bacteriogenic h agglutinin. Positive reactions with bacteriogenic haemagglutinins were obtained with various tissues other than red cells. Certain bacteriostatic and bactericidal agents prevented the formation of bacteriogenic haemagglutinins in serum or plasma.—R. O. MUIR.

PILLEMER, L., SEIFTER, S., & ECKER, E. E. (1942). **The Rôle of the Components of Complement in Specific Immune Fixation.**—*J. exp. Med.* **75.** 421–435. **592**

Rigidly controlled studies on complement fixation were made to determine the conditions governing the fixation of the components C′1, C′2, C′3 and C′4 of complement (mid-piece, end-piece, third and fourth components in the older terminology) and to endeavour to identify those components which combine with specific antigen-antibody compounds. Experimental results indicated that the amount of each component fixed by specific immune aggregates, such as mixtures of type III pneumococcus specific carbohydrate, human serum, haemocyanin, tobacco mozaic virus, and red blood cells of various species with the homologous rabbit antisera, depended upon a number of factors including the age of the complement; the concentrations of antigen, antibody, and complement; pH and electrolyte concentrations and the time and temperature of incubation for fixation. C′4 was considered a combining component of complement since it was invariably adsorbed by specific aggregates. C′3, although necessary for the final action of complement, as in haemolysis or bacteriolysis, was fixed only partially or not at all by antigen-antibody compounds. C′2 was fixed together with C′4 as shown by reactivation with a CO_2-insoluble fraction without C′4 activity. C′1, generally stated to be the single combining component, was adsorbed by immune aggregates in amounts varying with experimental conditions. Several reasons are given for questioning the assumption that C′1 is the single combining component of complement. The differing amounts of complement fixed by specific aggregates and nonspecific agents were ascribed to the marked chemical affinity of C′4, C′2 and C′1 for the surfaces presented by immune aggregates.—R. O. MUIR.

ECKER, E. E., WEISBERGER, A. S., & PILLEMER, L. (1942). **The Opsonins of Normal and Immune Sera. I. Methods. A Comparison of the Effects of Normal and Immune Opsonins on Staphylococcus aureus.**—*J. Immunol.* **43.** 227–243. **593**

ECKER, E. E., PILLEMER, L., & KUEHN, A. O. (1942). **The Opsonins of Normal and Immune Sera. II. The Opsonins of Sera of Different Species, the Role of Complement in Opsonic Activity and the Combination of an Immune Serum and a Normal Serum as Influencing Opsonization.**—*Ibid.* 245–258. **594**

I. The effects of normal and immune opsonins on a virulent, haemolytic strain of *Staph. aureus* are compared. Carefully standardized fresh, active g. pig serum, anti-staphylococcal rabbit serum, bacterial suspension and suspension of phagocytes were used, under conditions which ensured adequately controlled factors of time, temperature, pH, and osmotic pressure. Active g. pig serum was shown to contain a thermolabile anti-staphylococcal opsonin, operating as a function of its concentration without evidence of a zone phenomenon, with an equal effect upon viable and killed cocci and a greater effect upon an avirulent than a virulent strain. In contrast, the antiserum showed a typical zone effect and possessed a relatively thermostable active principle. While the optimal opsonic activity of g. pig serum occurred in hypotonic solutions, staphylococcal rabbit antiserum exerted a maximum opsonic effect in physiological salt solution. Although a lapse of 20–30 min. was necessary after mixture for the optimal activity of both serum and antiserum, the serum showed a greater opsonic effect during the first few minutes. The addition of active g. pig serum to optimal and suboptimal concentrations of the antiserum prevented the latter from exerting its full opsonic activity, whereas the addition of concentrated antiserum to g. pig serum inhibited the fresh serum action and resulted in the appearance of the prozone effect of the antiserum.

II. The methods described in I were employed to compare the opsonic effect of the sera of various animal species with relation to their haemolytic titres before and after heating at 56°C. for 30 min. A comparison was also made of the opsonic values of six active and heat-inactivated bovine sera. The opsonic values of various normal mammalian sera were studied after treatment with ammonia, zymin and CO_2, agents known to alter the components of g. pig complement. The influence of combinations of immune and normal sera upon opsonic activity was also determined for each animal species. No relationship was found to exist between the haemolytic, complementary and opsonic powers toward staphylococci of the sera of the animal species studied. The highest opsonic values were obtained with normal sheep and bovine sera and all the normal opsonins investigated proved for the most part

thermolabile. The CO_2-soluble fraction of g. pig serum which contains the end-piece and its associated fourth component of complement carried also the antistaphylococcal opsonic agent.

Results of a similar fractional analysis are given for the sera of other animal species. The opsonic value of rabbit serum was increased by treatment with zymin, unaffected by ammonia and destroyed by CO_2. The differences observed in human, monkey, and cat sera as compared with other animal sera were considered due to the presence of a thermostable as well as a thermolabile opsonin.—R. O. MUIR.

*PECORELLA, F. (1940). Vitamina C e anticorpi agglutinanti. **[Vitamin C and Agglutinating Antibodies].**—*Boll. Ist. sieroter. Milano.* **19.** 9–14. [Abst. from abst. in *Bull. Inst. Pasteur.* **40.** 110]. **595**

The authors report that in g. pigs injected with killed *Salmonella typhi* there was a higher titre of antibody when they were dosed with ascorbic acid than in g. pigs given similar infections but no ascorbic acid.

I. TORIKATA, R., & OZU, S. (1939). Experimentelle Erforschung über die Gewinnung allgemeiner aktiver Immunität mittels der kutanen Applikation der Immunogene als Salben. **[Production of Active Immunity by Cutaneous Application of Immunogens].**—*Z. ImmunForsch.* **96.** 413–426. **596**

II. TORIKATA, R., & HASHIMOTO, N. (1939). Ueber die Bildungsstätte der im Blute nachweisbaren Antikörper bei der Salbenimmunisierung. **[Site of Production of Antibodies in Cutaneous Immunization (of Rabbits)].**—*Ibid.* 454–465. **597**

I. In experiments on rabbits with "koktigen" prepared from *Staphylococcus pyogenes aureus*, it was found that a higher opsonin response was achieved by cutaneous application as an ointment than by intravenous or intradermal injection. Addition of irritants to the ointment reduced its effectivity.

II. It was determined that, after immunization by the ointment method 70% of the resulting antibody was produced by the skin and 30% by the internal organs.—J. E.

BAWDEN, F. C., & KLECZKOWSKI, A. (1942). **The Antigenicity of Non-Precipitating Complexes.**—*Brit. J. exp. Path.* **23.** 169–178. **598**

The behaviour of tomato bushy stunt virus and human serum whole globulin, after being heated for 10 min. at 83°C. or 95°C. in the presence of an unspecific protein—rabbit serum albumin—was studied *in vivo* and in complement-fixation reactions. The injection into rabbits of the non-precipitating complexes, formed by heating each specific antigen with unspecific protein, produced antisera apparently serologically identical with those produced against the unheated virus or globulin. Complement fixation was shown to be independent of the formation of insoluble material, since it occurred as strongly with specific antisera and solutions of the non-precipitating antigens as with those of the normal precipitating antigens. Sufficient heating destroyed most of the original antigenicity of the specific proteins without creating any new specificity. —R. O. MUIR.

BAWDEN, F. C., & KLECZKOWSKI, A. (1942). **The Effects of Heat on the Serological Reactions of Antisera.**—*Brit. J. exp. Path.* **23.** 178–188. **599**

The powers of heated antisera and antiserum fractions prepared against an H-type antigen (tobacco mosaic virus) and O-type antigens (tomato bushy stunt virus and human serum globulin) to fix complement and neutralize infectivity were compared with their ability to cause precipitation. The complement-fixing properties of all the antisera and the specific neutralization of infectivity by virus antisera were equally affected by heat. While the H-type antisera lost all three serological properties almost simultaneously, less heating was needed to inhibit the precipitating powers of O-type antisera than to destroy the other two serological properties. These results are explained on the basis of the formation of mixed complexes between antibodies and other serum proteins during heating.—R. O. MUIR.

HAUROWITZ, F., & SCHWERIN, P. (1942). **The Valence of Antibodies and the Structure of the Antigen-Antibody Precipitate.**—*Brit. J. exp. Path.* **23.** 146–150. **600**

Rabbits were immunized with arsanil-sheep-globulin, an antigen containing two different determinant groups, the phenyl arsenic acid group and the "sheep-globulin group". The immune serum so produced was exhausted first with arsanil-ovalbumin, then with sheep serum globulin, and finally with arsanil-sheep-serum-globulin.

In contradistinction to PAULING's theory [*V. B.* **12.** 30.] that antibody molecules are in most instances bivalent, the results in this case appear to indicate a predominance of univalent antibody molecules. Accordingly the antigen-antibody precipitate seems to consist of an aggregate of complex particles, each consisting of a multivalent antigen molecule bound to several univalent antibody molecules.—J. LOCHIEL MCGIRR.

BURTENSHAW, J. M. L. (1942). **The Mechanism of Self-Disinfection of the Human Skin and its Appendages.**—*J. Hyg., Camb.* **42.** 184–210. **601**

The technique of obtaining bactericidal substances from human skin, hair, cerumen and nails, is described, together with experiments to determine the effect of pH and of extracts of the skin and its appendages on β-haemolytic streptococci and various other bacteria. The sterilizing substance is identified and its relationship to egg-albumen studied. A comparison is made of the sterilizing power of certain organic acids present in the skin and its glandular secretions, and of the effects of cystein, blood, aeration, and ultra-violet light on the bactericidal action of the sterilizing substance and of fatty acids. Ether and alcohol extracts of human skin and its appendages were found to be powerfully, and saline extracts more weakly and inconstantly, lethal to β-haemolytic streptococci and other bacteria. The chief, if not the only, bactericidal constituents of these extracts proved to be the long-chain fatty acids and soaps. Cystein and blood inhibited, and ultra-violet light increased, their streptococcicidal activity.

There follows a discussion of the mechanism of sterilization involving these substances.—R. O. MUIR.

See also absts. **517** (TB.), **536**, **537** (psittacosis), **559** (viruses), **680** (resistance to infection).

PARASITES IN RELATION TO DISEASE [GENERAL]

VOGELSANG, E. G. (1940). Ecto y endoparásitos de los caninos (Canis fam.) de Caracas. **[Ecto- and Endoparasites of Dogs of Caracas, Venezuela].**—*Rev. Med. vet. parasit., Caracas.* **2.** No. 3/4. 65–69. **602**

The author lists the parasites of dogs found by him at autopsies in the Veterinary College, Caracas. The list includes :– *Dipylidium caninum, Toxascaris leonina, Ancylostoma caninum, Spirocerca lupi, Dirofilaria immitis, Trichuris vulpis, Dermatobia "hominis"* [? *D. cyaniventris* larvae], *Heterodoxus longitarsus, Ctenocephalus*

canis, *C. felis*, *Amblyomma maculatum*, and *Rhipicephalus sanguineus*. Fifty dogs were autopsied and all had parasites.—MILLER WATSON.

I. PENN, G. H., Jr. (1942). **The Life History of *Porocephalus crotali*, a Parasite of the Louisiana Muskrat.**—*J. Parasit.* **28.** 277–283. **603**

II. PENN, G. H., Jr. (1942). **Parasitological Survey of Louisiana Muskrats.**—*Ibid.* 348–349. **604**

I. Of 748 muskrats examined, 11·5% were infected with nymphal porocephalids in the liver, lungs, omentum, and gonads. Only adult muskrats were affected and females showed a slightly higher incidence than males. No pathologic effects are mentioned.

II. Thirteen species of parasites are recorded from Louisiana muskrats. *Hepaticola hepatica*, which may occur in man, was found in 50% of muskrats from one particular area.—M. L. BINGHAM.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

ROBERTS, F. H. S. (1941). **The Distribution of the Sheep Body Louse, *Bovicola ovis*, in Queensland.**—*Qd agric. J.* **55.** 108–109. **605**

The distribution is shown by means of a map, the most heavily infested areas including the Darling Downs and the Springsure-Jericho-Clermont-Emerald area. Westward of these areas, infestations become progressively less severe.—H. McL. GORDON.

HASE, A. (1941). Weitere Beobachtungen über die Maskierung bei parasitären Wanzen (Cimicidae und Triatomidae). [**Observations on "Concealment" among Parasitic Bugs (Cimicidae and Triatomidae)**].—*Z. Parasitenk.* **12.** 388–403. **606**

H. describes and illustrates by a number of photographs and drawings the "concealment" mechanism among the Cimicidae and Triatomidae. He shows that the larvae and adults of the species of Triatomidae examined (*Triatoma flavida*, *T. dimidiata*, *T. rubrofasciata*, and *Rhodnius prolixus*) conceal themselves with dust particles in varying degrees, according to their loss of flying power and general sluggishness of movement. The eggs, unlike those of the Cimicidae, do not possess a sticky surface and hence cannot be concealed by dust, but roll very readily into grooves and crevices.—E. R. P.

PETROVA, E. F. (1942). Sinantropnye mukhi g. Alma-Ata. [**Diptera of Alma-Ata**].—*Med. Parasitol., Moscow.* **11.** No. 1/2. 86–89. **607**

P. gives a general picture of the dipteran fauna at Alma-Ata and states that, of the 19 recorded species, *Musca domestica* was found most frequently. Other flies recorded in great quantities were *Muscina stabulans*, appearing mainly in pigsties, and *Protophormia azurea* in slaughterhouses. *Lucilia sericata* was frequently found in slaughterhouses. *Stomoxys calcitrans* appears in small numbers in byres, pigsties, and dwellings. *Phormia regina* was found in relatively large numbers in slaughterhouses; the fly appeared much earlier than *M. domestica*, at the end of March and the beginning of April. The seasonal appearance of the different types of flies is described, as well as the localities where the insects, their eggs, and larvae are most frequently found. Special attention is given to the seasonal cycle of *M. domestica*.—E. R. PARISER.

LENNOX, F. G. (1941). **Studies of the Physiology and Toxicology of Blowflies. 8. Rate of Ammonia Production by Larvae of *Lucilia cuprina* and its Distribution in this Insect. 9. The Enzymes Responsible for Ammonia Production by Larvae of *Lucilia cuprina*.**—*Pamphl. Coun. sci. industr. Res. Aust.* No. 109. pp. 9–34 and 37–63. [For previous parts, see *V. B.* **12.** 32]. **608**

8. Excretion of ammonia by larvae of *L. cuprina* during development on artificial media increases during growth, but only reaches a maximum 1–2 days after larval growth rate reaches a maximum. Excretion continues for some days after growth ceases. The quantity excreted per 100 larvae diminishes both with increase in population density of larvae and with improvement in the nutritive properties of the medium. Even in densely populated cultures, at the optimum stage of ammonia formation, only 36% of the total protein in the medium was deaminated in 24 hours.

The distribution of ammonia in individual larvae was studied. A diagram is given of the apparatus used.

9. The chief enzyme of the deaminase complex appears to be adenosine deaminase. Guanase and a compound capable of deaminating Witte's peptone are also present. Deamination occurs mainly in the midgut region of larvae, where proteolysis can also be demonstrated. The techniques used are fully described.

—H. McL. GORDON.

*EICHLER, W. (1941). Morphologische und biologische Merkmale mitteleuropäischer Dasselfliegen und ihrer Larven. [**Morphological and Biological Characters of Central European Warble Flies and Larvae**].—*Z. Parasitenk.* **12.** 95–106. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **141.** 143]. **609**

Nomenclature and host specificity of the following Central European types of warble flies are discussed: (1) *Hypoderma bovis*, mainly parasitic on cattle, sometimes parasitic on horses, (2) *H. lineatum*, usually parasitic on cattle and rarely on horses, (3) *H. diana*, parasitic on roe deer and red deer, elk, and chamois, and (4) *H. actaeon*, parasitic on red deer. The presence of warble-fly larvae, probably *H. lineatum*, in the human eye has been reported several times; whether, however, such larvae are capable of developing further than the first larval stage is doubtful.—E. R. PARISER.

MANCHIAMELO GENARO, J. (1942). La ura en el territorio nacional de Misiones, norte y este de la Provincia de Corrientes. [*Dermatobia* **Myiasis in Argentina**].—*Bol. tec. Direcc. gen. Agric. Ganad., B. Aires.* Secc. ganad. No. 5. pp. 275–297. **610**

The author reviews the subject of *Dermatobia* myiasis in Argentina. The vehicle there resembles the muscid fly, *Neivamyia lutzi*, but various flies, ticks, and mosquitoes are also suspected.

Dermatobia cyaniventris, its chief vehicle, and the development of its eggs and larvae are described in detail.—MILLER WATSON.

*SCHWARTZ, E. (1941). [**Precipitation Tests with Polysaccharide Antigen in *Gastrophilus* Infestation**].—*Közl. Összehas. élet- és kórtan Köréből.* **29.** 186. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 420]. **611**

Rabbits were sensitized with polysaccharide isolated from *Gastrophilus* larvae and received simultaneous injections of egg albumen. The precipitation titre was highest nine days after the last injection and precipitins had disappeared from the blood after 69 days. Seventy-three slaughter horses were tested with polysaccharide antigens recovered from *G. intestinalis*, from *G. nasalis*, and from both together. With the exception of three horses, all reacted positively with serum dilutions of 1 : 100 to 1 : 51,200, independently of whether or not they were infested.

The serum from four sucking foals, five months old, gave no reaction while the serum from two six-

month-old foals reacted positively up to dilutions of 1 : 51,200. When total extract was used, mares and foals gave a positive reaction only with dilutions up to 1 : 3,200.

The *Gastrophilus* precipitins do not seem to be transmitted from mother to foetus, and young foals that are not infested do not contain precipitins that can be demonstrated with the specific polysaccharide.

—A. L. WILSON.

LEWIS, E. A. (1942). **Tsetse-Flies and Development in Kenya Colony. Part II.**—*E. Afr. agric. J.* **8.** 9–14. [For part I, see *V. B.* **13.** 20]. **612**

Increase in stock in Kenya colony, due to control of the major diseases, has led to an overcrowding of stock in areas not infested by tsetse and an excessive use of watering places free from fly, with the production of soil erosion, whilst stock kept on the fringes of fly belts suffers periodic losses from trypanosomiasis. Fly distribution is still imperfectly known and some confusion has been caused by recording areas as fly-infested because animal trypanosomiasis has occurred. Where isolated outbreaks of trypanosomiasis occur they may be due to infection contracted outside the area, but when recurrent outbreaks occur, careful search usually reveals tsetse infestation. The fly belts are not uniformly infested and areas occur in them where stock can be kept, whilst it appears that stock traders know of routes through such areas which can be used with reasonable safety at certain seasons. The majority of tsetse species are dependent on water, *G. swynnertoni* and *G. longipennis* less so than other species; most of the large rivers in the colony harbour one or more species of tsetse whilst some species are able to establish themselves near isolated water holes, so that non-infested watering places for stock are restricted, and require development.

There is not much concrete evidence of unaided spread of tsetse in Kenya except for seasonal dispersals, but spread may occur by the flies following cattle, and being carried by road traffic or trains. The alignment of roads for the development of the colony must be so arranged that the tsetse fly situation is not aggravated. Central control of anti-fly measures is required as otherwise the expense falls on occupiers of land bordering fly areas, who may already be impoverished by losses from trypanosomiasis.

Methods of control consist of evacuating infested areas, clearing of bush (particularly in order to free watering places and road crossings from fly and to attack dry season areas of fly concentration), destruction of wild mammals, and trapping.—U. F. RICHARDSON.

ZUMPT, F. (1941). Die Tsetsefliegen und ihre Bekämpfung. **[Control of Tsetse Flies].**—*Dtsch. tropenmed. Z.* **45.** 118–124. **613**

A brief description is given of the measures which have been adopted for control of tsetse flies, and their value and practicability is discussed. No new material is presented.—U. F. RICHARDSON.

CÁNEPA, E., & DE GRAÑA, A. (1941). La presencia del Demodex Folliculorum Owen en los ganglios linfáticos de perros demodécticos. **[Presence of *D. folliculorum* in Lymph Nodes of Infested Dogs].** —*Rev. Fac. Agron. Vet., B. Aires.* **9.** 109–114. **614**

The authors examined the lymph nodes of five dogs with demodectic mange. In all five cases they found the parasite in the lymph nodes and in two cases identified eggs in their substance. The lymph nodes principally affected were those of the head and forequarters, which are the parts most frequently affected by mange. A number of photomicrographs illustrate the paper.—MILLER WATSON.

*KORZENSZKY, L. (1941). **[Morphology of *Sarcoptes suis*].**—*Közl. Összehas. élet- és kórtan Köréből.* **29.** 414–422. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 117]. **615**

It has not so far been proved whether the different strains of *Sarcoptes* occurring on different hosts are separate species or are only varieties of *S. scabiei*. According to VITZTHUM (1929) the human and canine forms are exceptional in this respect as their adult females are easily distinguishable from those of all other hosts. K. describes *S. equi* in all its stages of development in order to facilitate comparison with other forms. Details of the findings are not given in the abstract.

—E. R. PARISER.

FORTUSHNYĬ, V. A. (1942). Opyt polucheniya yaĭts i lichinok kleshcheĭ Psoroptes (Dermatocoptes) cuniculi i P. equi v laboratornykh usloviyakh. **[Method of Obtaining Eggs and Larvae of *Psoroptes cuniculi* and *P. equi* under Laboratory Conditions].**—*Med. Parasitol., Moscow.* **11.** No. 1/2. 99–100. **616**

Mites from infested rabbits and horses were tied in small bags made of soft material, 25–30 in each bag. The bags were placed on moistened filter paper in Petri dishes and left in controlled conditions of temperature and humidity. After ovipositing, the mites were taken from the bags and the eggs left to develop. 108 experiments were carried out, with 3,225 mites. The greatest numbers of larvae were obtained at temperatures of 37°–38°C. and 85–90% R.H. Many larvae did not reach the nymphal stage. At 22°C. and 60% R.H. no eggs were laid. 35°–38°C. and 75–90% R.H. constituted optimal conditions for egg laying and larval development of *Psoroptes*.—E. R. PARISER.

See also absts. **503** (mastitis vectors), **587** (virus vectors), **726**, **727**, **728** (insecticides).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

CHANDLER, A. C. (1942). **The Helminths of Raccoons in East Texas.**—*J. Parasit.* **28.** 255–268. **617**

All of 13 raccoons examined harboured 4–8 species of helminths. *Mesocestoides variabilis*, of which adults occurred in two raccoons and tetrathyridea in three, is a possible parasite of dogs in Texas. *Dirofilaria tenuis* n. sp. is described; it is a skin-inhabiting form related to *D. repens* of dogs in Europe. *Dracunculus insignis*, n. comb., is very similar to, but is smaller than, *D. medinensis* of man. *Pharyngostomoides procyonis* was the most abundant parasite found, and *Gnathostoma procyonis* n. sp. the most harmful.—M. L. BINGHAM.

MIRETSKIĬ, O. Y. (1942). Metilenovaya sin'ka kak indikator zhiznesposobnosti invazionovo materiala. Soobshchenie 1-e. Metilenovaya sin'ka kak indikator zhiznesposobnosti yaits i lichinok Rhabdias nigrovenosum. **[Use of Methylene Blue as Test Reagent of Helminth Viability. I. *Rhabdias nigrovenosum*].** —*Med. Parasitol., Moscow.* **11.** No. 1/2. 64–68. **618**

Living eggs, larvae, and half-mature hermaphrodite individuals of *R. nigrovenosum*, eggs of *Ascaris lumbricoides*, and onchospheres of *Taenia saginata* were not dyed by a weak aqueous solution of methylene blue, although dead eggs and larvae took up the colour. About 50% of the larvae of *R. nigrovenosum* were killed when treated for two hours with a 1 : 1,000 methylene blue solution, but 1 : 25,000 or 1 : 50,000 methylene blue solutions could be used to determine the viability of eggs and larvae, the time required for this test being

2–3 hours. M. describes an experiment in which soil was artificially infected with eggs and larvae, and shows how the proportion of dead and living eggs and larvae could be found by testing the soil with 1 : 25,000–1 : 50,000 methylene blue solutions.—E. R. PARISER.

TUBANGUI, M. A., & MASILUÑGAN, V. A. (1941). **Trematode Parasites of Philippine Vertebrates, IX, Flukes from the Domestic Fowl and other Birds.**—*Philipp. J. Sci.* **75.** 131–141. **619**

The following trematodes are recorded from the domestic fowl :– *Notocotylus intestinalis*, *Prosthogonimus pseudopellucidus* n.sp., *P. cuneatus*, *Echinostoma revolutum*, *Episthmium* [= *Echinochasmus*] *gallinum* n.sp., and *Brachylaemus malayensis* n.sp. *Tamerlania bragai* was found in a domestic pigeon.—M. L. BINGHAM.

CAWSTON, F. G. (1941). **A Consideration of the Resistance of Molluscs and Mammals to the Attacks of Larval Trematodes.**—*J. trop. Med.* (*Hyg.*). **44.** 8. **620**

This is a brief general discussion of the resistance to trematode invasion of abnormal or accidental hosts. " Creeping eruption " due to skin infection by larvae of *Ancylostoma braziliense* in man is mentioned, as is also the recovery of adult *Schistosoma haematobium* from the eyelid of a puppy previously exposed to cercarial infection at that site. High eosinophilia in man is stated to indicate strong resistance and the presence of numerous developing forms, only a fraction of which attain maturity. The resistance of *Limnaea truncatula* and *L. natalensis* to experimental infection with the cercariae of *Fasciola hepatica* is commented on.—E. S.

MARCATO, A. (1942). Il midollo osseo nella distomatosi epatica dei bovini. **[The Bone Marrow in Bovine Fascioliasis].**—*Nuova Vet.* **20.** 219–223. **621**

In examinations of the peripheral blood of bovine animals infested with *Fasciola hepatica*, M. found eosinophilia in a few, but generally there was a reduction in the number of eosinophile leucocytes. In the bone marrow, however, he found an increased production of eosinophiles. In the blood there was in many cases a marked increase in the number of lymphocytes and immature eythrocytes, with some increase in neutrophiles. In the marrow there was marked increase in the production of the granular series of leucocytes and of erythrocytes.—MILLER WATSON.

*WERTHEIM, P. (1941). **[Typical Sites of *Limnaea truncatula* in the Drau Valley, Yugoslavia].**—*Vet. Arhiv.* **11.** 18–27. **622**

*WERTHEIM, P. (1941). **[*Limnaea truncatula* in the Zagreb Area].**—*Ibid.* 121–138. **623**

[Absts. from absts. in *Jber. Vet.-Med.* **69.** 119 & 118].

Accounts of the incidence of *L. truncatula*, the intermediate host of *Fasciola hepatica*, in two areas in Yugoslavia.—E. R. PARISER.

GALLIARD, H., & DANG-VAN-NGU. (1941). L'infestation de l'homme et du chien par *Fasciolopsis buski* au Tonkin. **[*F. buski* in Man and Dogs in Tonkin].**—*Rev. méd. franç. Extr.-Orient.* **19.** 31–37. **624**

Infestation of pigs, the reservoir host of *F. buski*, varied from 6% in March to 47% in December and seldom exceeded 6–7 parasites per animal. One case of natural infestation of a dog is noted. The authors consider the dog to be an unfavourable host since, of five dogs which they attempted to infect with adult flukes, only one was found to remain infected ; in this one, after transplantation of adult flukes into the intestine by direct laparotomy, three out of the five flukes introduced were recovered P.M. four days later. They do not consider that separate species of *Fasciolopsis* exist in man, pig, and dog, despite differences in size, shape of cirrus-sac, and position of ovary in specimens from these hosts. The rarity and frequency respectively of human and porcine infestations in Tonkin are accounted for by the fact that, of the plant infective agents, *Trapa natans* is rare and is only eaten by the Tonkinese after being cooked, whereas *Eichhornia* [= *Piaropus*] *crassipes*, although common, is largely used as pig fodder.
—J. N. OLDHAM.

KU, C. T. (1940). **Studies on the Genus *Prosthogonimus* of the Domestic Duck in Kunming.**—*Peking nat. Hist. Bull.* **15.** 119–131. **625**

K. found 30–50% of domestic ducks in the vicinity of Kunming to be infested with flukes of the genus *Prosthogonimus*. Six species are identified, of which four, *P. cuneatus*, *P. pellucidus*, *P. horiuchii*, and *P. orientalis* are re-described and two, *P. sinensis* and *P. penni*, are described as new species. A key for the identification of *Prosthogonimus* species and a comprehensive table of the characters of this genus are also included.—M. L. BINGHAM.

FORTUYN, A. B. D., & FENG, L. C. (1940). **Inheritance in Mice of the Resistance against Infection with Eggs of Taenia taeniaeformis.**—*Peking nat. Hist. Bull.* **15.** 139–145. **626**

A difference in resistance to infection with large numbers of *T. taeniaeformis* eggs was again shown to exist between two inbred strains of mice [see also FENG & HOEPPLI—*V. B.* **10.** 181]. In the less resistant strain the females were more susceptible than the males. By crossing the strains, resistant offspring were obtained, but the lower resistance of the female was inherited by the hybrids. In the parent generation, abortive cysts or liver spots were frequently found associated with true *Cysticercus fasciolaris*, whilst in the offspring spots alone were common, and cysts together with spots were rarely found. It is suggested that differences in the infectivity of the eggs might have accounted for some of these irregularities.—M. L. BINGHAM.

AGUILAR, F. J. (1941). Parásitos que existen en Guatemala. La Tenia Equinococo en estado lavario infesta en considerable proporción al cerdo. Es muy probable que existan casos humanos. **[Parasitism in Guatemala. Echinococcus Infestation of Pigs].**—*Guatemala Méd.* **6.** No. 11. 4–5. **627**

From 1936–40, over 4,000 carcasses of pigs slaughtered at the municipal abattoir were condemned on account of hydatidosis. The percentage incidence of the disease in slaughter pigs varied from 0·22–6·12 during these years.

Stress is laid on the danger of infestation of human beings, hitherto recorded only once in Guatemala.

I. LUTTERMOSER, G. W., & ALLEN, R. W. (1942). **The Influence of Diets High and Low in Protein on the Growth Rates of Chickens Infected with the Tapeworm, *Raillietina cesticillus*.**—*Poult. Sci.* **21.** 111–115. **628**

II. REID, W. M. (1942). **The Removal of the Fowl Tapeworm *Raillietina cesticillus* by Short Periods of Starvation.**—*Ibid.* 220–229. **629**

III. REID, W. M. (1942). **Certain Nutritional Requirements of the Fowl Cestode *Raillietina cesticillus* (Molin) as Demonstrated by Short Periods of Starvation of the Host.**—*J. Parasit.* **28.** 319–340. **630**

I. Young chickens, experimentally infected with *R. cesticillus*, were fed diets containing respectively 13% and 26% protein. Those on the 13% protein diet gained less weight than did uninfected controls over a six weeks' period while chickens receiving the larger amount of protein were approximately the same weight as the uninfected control birds. There was little or no

correlation between the number of cestodes present and the growth-rate retardation of the host.

II. Starvation for 24–48 hours resulted in the elimination of the strobila of *R. cesticillus* from infested fowls. Even longer periods of starvation, up to 20 days, did not, however, reduce the infestation, since the scolices were not removed and were able to regenerate new strobilae when normal feeding was resumed. Elimination of proglottids is sometimes associated with a change in diet or environment, but such elimination appears to result directly from the voluntary starvation which frequently accompanies such changes. Feeding of oats, sometimes recommended for the elimination of tapeworms, was found to have no anthelmintic effect. Starvation of newly infected hosts prevented some worms from becoming established, and retarded the growth of those that were able to establish themselves. Since, however, the scolex can regenerate new segments so rapidly, starvation is not recommended as a method of anthelmintic treatment of fowls.

III. Estimations of the glycogen content of *R. cesticillus* from starved and unstarved chickens showed that starvation of the host for 20 hours significantly reduced the level and probably explains the release of strobilae. During a normal 24-hour feeding cycle of the host, the glycogen content fluctuated between 7·14% of the worm weight at 6 p.m. and 3·68% at 6 a.m. This appears to confirm the relationship between the proglottid production cycle, which has been reported by other authors for *R. cesticillus* and *Davainea proglottina*, and food intake by the host. The mean percentage composition of *R. cesticillus* was found to be 79·46% water and 3·20% ether-soluble extract in worms from unstarved chickens and 82·97% water and 2·70% ether-soluble extract in worms from hosts starved for 16–20 hours. Other constituents of worms from unstarved hosts were 6·51% glycogen, 1·14% nitrogen, and 2·36% ash. Estimations of the weights of about 1,270 worms confirmed that crowding causes stunting of their size. Proglottid counts, combined with a knowledge of other biological factors, allowed a rough estimate to be made of the number of worms in a fowl. —M. L. Bingham.

Gefter, V. A. (1942). Sravnenie effektivnosti laboratornykh metodov diagnostiki strongiloidoza. [**Comparison of Laboratory Methods for Diagnosis of *Strongyloides* Infestation**].—*Med. Parasitol., Moscow.* **11.** No. 1/2. 60–64. **631**

G. found that the Baerman technique, when applied to the diagnosis of *Strongyloides* infestation in human beings, recovered 96% of the parasites in a single estimation. The method is compared with those of Fülleborn, Kallantaryan, etc.—E. R. Pariser.

*Eber, G. (1941). [**Research on *Strongyloides papillosus***].—*Közl. Összehas. élet- és kórtan Köréből.* **19.** 457. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 151]. **632**

A general paper containing descriptions of the parasites and the life-cycle.—A. L. Wilson.

*Ilić, T. (1940). [**Trichinosis Epidemic in Visegrad, Yugoslavia**].—*Glasn. hig. Zav.* **23.** 371–384. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 117]. **633**

The author describes a trichinosis epidemic among the guests at a hotel in Višegrad. The origin of the infection could not be traced.—E. R. Pariser.

*Hofmann, H. (1940). Die Verteilung der Pferdestrongylidenarten im Kot. [**Distribution of Horse Strongyles in Faeces**].—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 90]. **634**

H. recommends taking the average larval count of faecal cultures made from samples of dung taken on three consecutive days, in order to get the most accurate results. In some experimental horses the differential count was as follows :– *Trichonema* spp. 71·2%, *Strongylus equinus* 8·1%, *S. vulgaris* 10·9%, *S. edentatus* 10·0%. Several experiments with tablets of allegan (sodium *p*-glycolylaminophenylarsinic acid) showed the value and low toxicity of this vermicide.—Ann F. Russell.

*Kotlán, S., & von Mócsy, J. (1941). [***Bunostomum* Infestation of Cattle**].—*Közl. Összehas. élet- és kórtan Köréből.* **29.** 256. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 419]. **635**

This concludes a series of articles dealing with the incidence, mode of infection, and diagnosis of bunostomiasis. Distol, a filix-mas preparation, proved to be a satisfactory anthelmintic, killing all the parasites in most of the animals treated.—A. L. Wilson.

Kotlán, S., & Vajda, T. (1939). Tanulmányok a sertések Hyostrongylus rubidus okozta gyomorférgességéről. [**Stomach-Worm Disease in Pigs Caused by *H. rubidus***].—*Állatorv. Lapok.* **62.** 233–239 and 255–258. **636**

H. rubidus has lately assumed great importance as a stomach parasite in pigs in Hungary, in some districts involving interference with breeding. The morphology and development of the worm, and the clinical symptoms of the disease are described. Examination of stomach contents after administration of emetics and cultural demonstration of the larvae (Vajda's glycerin method) both gave satisfactory results in differentiation of the worm from other forms, especially *Oesophagostomum dentatum*.—J. Csonka.

*Roetti, C. (1941). Un elminta del genere ostertagia parassita degli ovini e caprini. Nuova specie. [**New Species of *Ostertagia* in Sheep and Goats in Abyssinia**].—*Ann. Pat. trop. Parassit.* **2.** 251–256. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 117]. **637**

Trichostrongyles of the genus *Ostertagia*, found in the abomasum of Abyssinian sheep and goats, were given the name of *O. elongata* because of their exceptional length.—E. R. Pariser.

Kotlán, S., & Mócsy, J. (1941). Felterjesztés a m.kir. földmívelésügyi miniszter úrhoz egy zemplénmegyei község szarvasmarha-állományában jelentkezett tüdőférgesség tárgyában. [**Memorandum to the Minister of Agriculture in Respect of Lungworm Disease in Cattle in a Village of the County of Zemplen**].—*Állatorv. Lapok.* **64.** 143–144. **638**

Of 1,200 cattle in the village more than 10% were infested with metastrongyles, and 20 animals had already died. Young and badly nourished animals were particularly affected. It had been established that flooding of the pastures was responsible for the high degree of infestation, and proposals are made for drainage of the pastures, since the free-living stages of the worms cannot withstand continued dry conditions.—J. Csonka.

Williams, D. W. (1942). **Studies on the Biology of the Larva of the Nematode Lungworm, *Muellerius capillaris*, in Molluscs.**—*J. Anim. Ecol.* **11.** 1–8. **639**

W. confirmed that the free-living larvae of *M. capillaris* may withstand desiccation for periods up to a week. Two molluscs, *Milax sowerbyi* and *Hyalinia cellaria*, which had not hitherto been recorded as intermediate hosts, were experimentally infected with *M. capillaris*. The common large black slug, *Arion ater*, was also artificially infected, but as the larvae did not develop to the infective stage, this mollusc was thought to be of no importance in the transmission of *M. capillaris*. A survey of 12 districts around Cardiff and the Rhondda Valley revealed that each district contained

infected molluscs and that *Agriolimax agrestis* was the commonest and most important intermediate host. The free-living larvae showed no particular choice of mollusc, so that the relative importance of various molluscs in any district depends on their relative numbers in that district. No molluscs were found at the summits of mountainous districts.—M. L. BINGHAM.

HSU, Y. C., & HSU, H. S. (1940). **Effects of Chemical Reagents on the Development of Eggs in Ascaris lumbricoides Linn.**—*Peking nat. Hist. Bull.* **15.** 103–118. **640**

Observations were made on the effects of various reagents upon the development of *A. lumbricoides* eggs at 16°–28°C. and at 29°–34°C. In most cases the rate of development was greater at the higher temperatures. Phenol in dilutions of 1–5% was rapidly lethal for the eggs and 2–10% solutions of sodium hydroxide allowed only slight development. Eggs developed successfully in formalin solutions up to 10%, in 10% glycerin, and in hydrochloric acid and glacial acetic acid diluted below this concentration. Nitric and sulphuric acids in concentrations below 1% allowed development, although the incubation period was prolonged. Hatching was not observed above 32°C., and does not occur at all in the absence of mechanical or physical irritation.—M. L. B.

ROMBOLI, B. (1942). Infestione da Tetrameres fissispina nel piccione domestico. [*T. fissispina* **Infestation in Pigeons**].—*Nuova Vet.* **20.** 228–234. **641**

R. reports *T. fissispina* infestation in pigeons dying in a very emaciated condition, and is of the opinion that death was caused by interference with digestive functions. The parasites were found in the acini of the glands of the glandular stomach. In some cases, males as well as females were present. The glands were involved in various inflammatory changes. When the acute stage was passed there was marked fibrosis, giving rise to pressure which affected non-infested glands.
—MILLER WATSON.

See also absts. **729**, **730**, **731** (anthelmintics), **732** (heartworm), **750**, **751**, **752** (diagnosis).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

*BERRINGER, H.-J. (1941). Die Serum-Kochprobe nach H. F. Kürten und ihre Bedeutung als Carcinomnachweis beim Hunde. [**Kuerten's Boiled Serum Test for Cancer, and its Value in Dogs**].—*Inaug. Diss., Berlin.* pp. 45. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 341]. **642**

To perform the test, 5–8 ml. blood are centrifuged for ½–¾ hour, and 0·5–1·0 ml. serum placed in a tube which is then constantly shaken and heated. Three types of coagulation are found :– KF 1, in which the serum solidifies momentarily, then splatters the sides of the tube, forming adhesive lumps of protein, and leaving an opalescent fluid in the bottom of the tube ; KF 2, when after slight foaming a gelatinous lump is formed ; KF 1/2, when the serum solidifies with difficulty or only partially, and small flecks of protein are formed on the walls. In 20 cases of malignant tumour KF 2 was produced ; sarcomas yielded KF 2 or 1/2, benign tumours KF 1, rarely KF 1/2. In all, 43 cases were examined.—J. G. CARR.

THOMPSON, W. W., & RODERICK, L. M. (1942). **The Relation of Leucemia and Bovine Lymphocytoma.**—*Amer. J. vet. Res.* **3.** 159–165. **643**

The terminology of the malignant diseases involving the blood and blood-forming organs is extremely confusing. The authors believe that the various descriptive terms for what is the same fundamental malignant process should be dispensed with ; the term "lymphocytoma" appears to be the most appropriate one to use for those neoplastic processes primarily involving lymphoid cells and tissues. It is probably the most common neoplasm of cattle and it may be found to be a problem of economic importance. The disease is generally characterized by a varying degree of leucaemia with a differential leucocyte count showing a predominance of atypical lymphocytes in the circulating blood. A total leucocyte count and a differential leucocyte count in obscure bovine ailments may often result in a diagnosis of lymphocytoma.

The pathology of the disease is described, including that of the occasional case of myeloid leucaemia. There are six good figures.—D. L. HUGHES.

RUSS, S., & SCOTT, G. M. (1942). **Experiments Showing the Influence of one Growing Tumour upon Another.**—*Brit. J. exp. Path.* **23.** 127–133. **644**

Development of a slowly growing Jensen's rat sarcoma [J.R.S.] in one flank of an animal was stimulated by inoculation in the opposite flank of a graft from a rapidly growing tumour. Similarly, growth of the first tumour was inhibited when the second graft was taken from a relatively slowly growing tumour.

In the same way, the growth of a J.R.S. treated with a sublethal dose of X-rays was stimulated by the inoculation of a graft of rapidly growing tumour. An X-ray-treated J.R.S. inhibited the development of a normal tumour already growing in the rat, the average volume of the original tumours in this case being only half that of the controls.—ISOBEL W. BURTON.

SPENCER, R. R., & MELROY, M. B. (1942). **The Mechanism of Species Adaptation to Carcinogens.**—*Science.* **95.** 592–595. **645**

Three widely separated types of living organisms, *Salmonella typhi*, *Paramoecium multimicronucleatum*, and *Stenostoma tenuicaudatum* (a small flatworm), were exposed continuously for a considerable period of time to carcinogenic agents and the effects on subsequent generations were observed. Concentrations of the carcinogen which were without demonstrable deleterious effect on individual organisms, sometimes in fact appearing to act as a stimulant, eventually caused weakening of each species and in some cases brought about complete destruction even when the exposure to the carcinogen was discontinued after only a few generations. The biological generalization that certain environments may be ontogenetically harmless but phylogenetically lethal is suggested. Preliminary studies suggest that a rhythmic rather than a continuous exposure of a species to harmful environments may be a useful method to employ in investigating the mechanism of species adaptation, since resistance appears to be greater when periods of exposure are followed by intervals during which recovery and adaptation can occur.—E. G. W.

FRIEDEWALD, W. F., & ANDERSON, R. S. (1941). **Influence of Extraneous Protein and Virus Concentration on the Inactivation of the Rabbit Papilloma Virus by X-Rays.**—*J. exp. Med.* **74.** 463–487. **646**

The authors have carried out a series of experiments, the results of which indicate that the papilloma virus of rabbits is not as resistant to X-rays as had been previously believed ; the presence in virus suspensions of foreign material in the form of extraneous protein appeared largely to account for the ineffectiveness of the rays. It was found that the dilution of suspensions as well as high-speed centrifuging tended to lower the

resistance of the virus to X-rays until it became evident that purified and diluted suspensions of virus were no more resistant to the rays than are some bacteria and similar organisms. The addition to purified virus suspensions of normal rabbit serum or crystalline egg albumin added very greatly to the amount of energy required to inactivate the virus. The authors believe that the regression of actual tumours following exposure to X-rays is due to the effect of the rays upon the tumour cells which in turn protect the virus from harm.

—J. C. Buxton.

*Doljanski, L., & Pikovski, M. (1941). **Cultures in Vitro of Blood Cells, Bone Marrow, and Myocardium From Leukotic Fowls.**—*Cancer Res.* **1.** 205–216. **647**

This is an account of tissue-culture studies of blood, bone marrow, and myocardium from chicks infected with haemocytoblastosis (Engelbreth-Holm's strain T). Several chicks inoculated with leucotic material developed a sarcoma at the site of injection, an observation which has been made also by other workers. Leucotic material remained viable in tissue culture up to six months and the leucotic cells became converted into fibroblasts after repeated subculturing, so that eventually the material consisted almost entirely of colonies of fibroblasts which were, however, still infective on inoculation into chicks and produced typical leucotic changes. The infective agent can thus remain alive in tissue culture even when the original leucotic cells have been transformed into nonspecific mesenchymal cells (fibroblasts), a finding which does not support the view that virulence is dependent on the presence of "specific" leucotic cells.—E. G. White.

Cole, R. K. (1941). **Genetic Resistance to a Transmissible Sarcoma in the Fowl.**—*Cancer Res.* **1.** 714–720. **648**

Genetic resistance to a transmissible sarcoma (spindle-cell sarcoma of Jungherr) was demonstrated in White Leghorns. Using 2,676 pure-bred chicks it was possible to differentiate two lines, one having a relatively high resistance and the other a low resistance to the tumour. The difference in resistance between the two lines increased with each succeeding generation. Susceptibility was not influenced by sex or age. There was no evidence to show that resistance to the tumour was indicative of resistance to the common causes of poultry mortality.—E. G. White.

Murphy, J. B., & Sturm, E. (1941). **Further Investigation on the Transmission of Induced Tumors in Fowls.**—*Cancer Res.* **1.** 609–613. **649**

Work on eight different fowl tumours induced by carcinogenic substances failed to provide evidence of transmissible agents separable from the tumour cells. Desiccation, filtration, and high-speed sedimentation were used for preparing the material and each of these methods has been successful in the case of spontaneous fowl tumours. Irradiation in doses sufficient to damage the tumour cells but not to inactivate the infective agent destroyed the transplantability of the induced tumours.

—E. G. White.

Barrett, M. K. (1940). **The Influence of Genetic Constitution upon the Induction of Resistance to Transplantable Tumors.**—*J. nat. Cancer Inst.* **1.** 387–393. **650**

The growth of transplanted mammary carcinomas in three strains of mice which had been previously immunized with defibrinated whole blood of the same strain or one of the other strains was compared with growth in unimmunized mice. The degree of resistance to tumour growth varied with the genetic interrelationships of the host, tumour, and blood donor. No significant resistance could be induced in an inbred strain of mice against a tumour derived from the same strain. This finding suggests that autoplastic grafting is unlikely to be successful in the treatment of cancer in man.—E. G. White.

Loeb, L. (1940). **The Significance of Hormones in the Origin of Cancer.**—*J. nat. Cancer Inst.* **1.** 169–195. **651**

This is a comprehensive review by a recognized authority of the relation of hormones to cancer in laboratory animals. Most of the work reviewed deals with mammary tumours and this is of interest to veterinarians in view of the frequency of mammary cancer in the bitch. There is a general discussion of the problem, excluding the possible preventive effects of hormones, and there are 153 references.—E. G. W.

Miller, E. W., & Pybus, F. C. (1942). **The Effect of Oestrone on Mice of Three Inbred Strains, with Special Reference to the Mammary Glands.**—*J. Path. Bact.* **54.** 155–168. **651a**

Three hundred mice from three inbred strains, Simpson, Edinburgh, and CBA, differing in their incidence of spontaneous mammary carcinoma were divided into four groups, *viz*, ovariectomized and non-ovariectomized females, and castrated and non-castrated males, and injected weekly with 300 I.U. ketohydroxy-oestrin from the age of five weeks until death.

Forty-four palpable mammary tumours were produced in 135 Simpson mice, three in 75 Edinburgh, and none in 112 CBA mice; these differences were correlated with the normal expectation of life of the strains, the longer the life the slower the response. The development response of the mammary tissue appeared to indicate that the natural ovarian hormones increased the effect of the treatment whereas the male hormone had an antagonistic effect.

Tumours of the cervix and uterus were produced in 30 out of 64 CBA mice, four in the Edinburgh strain and two in the Simpson. The incidence of lymphadenopathies was greatly increased in all groups.—A. T. C.

Andervont, H. B. (1940). **Effect of Colchicine and Bacterial Products on Transplantable and Spontaneous Tumors in Mice.**—*J. nat. Cancer Inst.* **1.** 361–366. **652**

Intraperitoneal injections of colchicine in mice in amounts close to the lethal dose caused haemorrhage in transplanted tumours, but the effect was no greater than that produced by injections of a filtrate of a broth culture of *Bacterium coli*. Repeated injections of smaller doses of colchicine, insufficient to produce haemorrhage, were without effect on the rate of growth of spontaneous or transplanted tumours. The combined effect of colchicine and bacterial filtrate was no greater than that of either alone. A transplantable carcinoma which was originally resistant to the haemorrhage-producing effect of colchicine became susceptible after 17 passages in series.—E. G. White.

Badger, G. M., Elson, L. A., Haddow, A., Hewitt, C. L., & Robinson, A. M. (1942). **The Inhibition of Growth by Chemical Compounds.**—*Proc. roy. Soc.* Ser. B. **130.** 255–298. **653**

In extensive investigations into the growth-inhibitory activity of carcinogenic compounds and related derivatives, over 200 complex chemical substances were tested, assay of growth-restraining power being made by estimating the effect of intraperitoneally injected test substance on the growth rate of experimentally implanted carcinomas in rats.

Following a short introductory review of Haddon's theory of tumour induction (an hypothesis based on the conception that the association of carcinogenic and growth-inhibitory properties, exhibited by many

tumour-producing compounds, is of aetiological significance), comprehensive experimental data are presented. The vast majority of the compounds investigated showed a striking degree of correspondence between inhibitory and carcinogenic activity. Nevertheless, certain highly carcinogenic 9 : 10 substituted benzanthracene derivatives were not growth inhibitory and, conversely, a number of non-carcinogenic azonaphthalene derivatives exhibited marked inhibitory activity. In relation to these latter compounds, however it must be remembered that, while not inherently carcinogenic themselves, they may undergo chemical transformations in the liver which may eventually lead to carcinogenic effects. It was also shown that the activity of many of these "carcinogenic-growth-inhibitory" substances could be decreased by increasing the size of substituent groups, or by introducing solubilizing groups.—J. LOCHIEL MCGIRR.

DISEASES, GENERAL

—. (1940). Reglamento para aplicación de la ley sobre tratamiento sanitario obligatorio del ganado (B.O. del Estado no. 44). **[Spain : The Law Relating to the Obligatory Control of Livestock Diseases].**—*Bol. of. As. prov. vet. Zaragoza.* **15.** No. 151. 7–10. **554**

According to this law, a number of diseases become notifiable by provincial veterinary inspectors. They include anthrax, blackleg, foot and mouth disease, bovine contagious pleuro-pneumonia, sheep pox, contagious agalactia, haemorrhagic septicaemia, swine erysipelas, swine fever, and fowl plague. Any other disease which may become epizootic must also be reported.

The National Livestock Service may compel owners to take the necessary steps for the control of infective diseases of livestock, the work to be carried out by district veterinarians.

The regulations provide for a system to be used for inoculation measures, rates of payment to veterinarians, inspection of carcasses of animals which die in circumstances that are suspicious of a scheduled disease, and compulsory registration of the numbers of livestock held by each owner. The sale of biological products is controlled. The regulations also include penalties for disregarding the animal disease control regulations.
—MILLER WATSON.

—. (1939). Soveshchanie po brutsellezu i paratuberkulezu. **[Report of the Conference on the Control of Brucellosis and Johne's Disease in the U.S.S.R. held by the Veterinary Department of the Ministry of Agriculture, March, 1939].**—*Sovyet. Vet.* No. 5. pp. 90–92. **655**

Brucellosis control.—The results of the campaign against brucellosis in 1938 were not satisfactory, due to inadequate use of the agglutination and intradermal tests, difficulties encountered in the segregation of infected animals, and incoordination among administrative bodies. A special commission of the Soviet Ministry of Agriculture reported that the allergic test had been found to be more effective than the agglutination test, especially in herds where infection persisted over a long period. It was claimed that 8–9 times more infected animals could be detected by the use of abortin than by the aggln. test.

Obligatory use of combined aggln. and intradermal tests of cattle and sheep in breeding and state farms and the segregation of reactors, together with the other general sanitary measures, have been adopted. In other farms both the aggln. and intradermal tests must be applied to cattle and the intradermal test alone to sheep and goats. Veterinary surgeons should be permitted to carry out the allergic test only after special training ; in exceptional cases permission can be granted to specially trained technical assistants to do the work.

Eradication should be effected on an area basis, independent of the farm area. It is proposed that eight new departments at Minsk, Tashkent, Omsk, Novosibirsk, Kiev, Chkalov, Ufa, and Simferopol, be created for research work and for the control of eradication. The expenditure involved should be carried in the All-Union budget. Special funds are requested for the organization of isolation farms for segregation of valuable brucella-infected breeding stock and for compensation for animals seized. A uniform system of movement permits for cattle should be introduced.

Johne's disease control.—During 1920–30 imported Shorthorns and Herefords were blamed for the spread of Johne's disease in the U.S.S.R. The existing measures were unsatisfactory, mainly due to lack of a reliable diagnostic method. Avian tuberculin applied subcutaneously, which has been used up to the present, proved to be unsatisfactory. A paper was presented at the conference by VISHNEVSKIĬ on the control of Johne's disease in U.S.S.R. and in other countries ; he recommended the use of a "new specific allergen". The conference decided to organize a new department at the All-Union Institute for Experimental Veterinary Science, Moscow, for research, control work, and training of veterinary personnel in details of this disease, and also to carry out field investigations. The regional and local veterinary departments should be instructed to make systematic observations in their districts and to supply the necessary statistics. Farmers should be systematically instructed in the symptoms of this disease by means of the daily press, radio, meetings etc.

A special commission has been nominated to test the johnin advocated by VISHNEVSKIĬ and in the meantime it has been decided to replace the subcutaneous test by the double intradermal avian tuberculin test.
—A. MOLDAWSKY.

MCINTOSH, R. A. (1942). **Diseases of the Newborn in the Equine Species.**—*J. Amer. vet. med. Ass.* **100.** 244–248. **656**

Diseases of foals are discussed under the headings of avitaminosis ; congenital infections including foal septicaemia, umbilical infection, and persistent urachus ; and septic arthritis (navel-ill). In the treatment of the last condition the use is advocated of "navel-ill bacterin" in the pregnant mare and "navel-ill serum" followed by bacterin in the foal.—D. D. OGILVIE.

*LEUE, G. (1941). Beziehungen zwischen Zahnanomalien und Verdauungsstörungen beim Pferd unter Heranziehung von Kaubildern. **[Connexion between Tooth Anomalies and Digestive Disorders in Horses].**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 170]. **657**

A description of the well known tooth anomalies of the horse and the resulting digestive disorders which give a predisposition towards attacks of colic. The work confirms the diagnostic value of the system of analysis of the manner in which the horse masticates, recorded by the author's father, P. LEUE.—TJ. BAKKER.

*RICHTER, G. (1942). Über Verwachsungen im Hohlraumsystem des Gehirnes beim Pferde. **[Adhesions in the Brain Ventricles in the Horse].**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 373]. **658**

An anatomical study was made of the brains of a large number of horses. In almost every case adhesions

were found in the lateral ventricles; involving their middle and ventral areas. These lesions, according to R., originated from some form of damage inflicted on the ependyma by the cerebrospinal fluid. The general health of horses showing such adhesions did not seem to have been affected.—M. LANDAU.

DIMOCK, W. W., & TRUM, B. F. (1942). **Periodic Ophthalmia.**—*Army vet. Bull., Wash.* **36.** 199–209. **559**

A statistical survey is made of 1,076 cases of periodic ophthalmia occurring in U.S. Army horses and mules during the years 1927–37 inclusive. Comprehensive data in 21 tables summarize the results. In general, no new facts emerge.—D. D. OGILVIE.

STUBBS, E. L., & LOVE, W. G. (1941). **Studies on Sensitization: Its Possible Relationship to Periodic Ophthalmia.**—*N. Amer. Vet.* **22.** 539–542. **660**

Attempts were made to incriminate protein fractions of intestinal parasites and of dietary constituents of the horse as sensitizing agents responsible for periodic ophthalmia. Two methods were employed. In the first, skin tests for sensitiveness were carried out on normal horses with "allergens" extracted by Coca's method: the number of positive reactions was so high that the experiments were abandoned. In the second method, rabbits were sensitized to protein extracts of horse strongyles, and later injected subsclerally with the appropriate antigen. The local inflammatory reactions which resulted were more severe than those resulting in unsensitized control rabbits.—ALASTAIR N. WORDEN.

*BRUNEMANN, J. (1941). Beitrag zur Histologie des Hufkrebses. **[Histology of Canker of the Hoof in Horses].**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 480]. **661**

Frozen sections, made from feet affected with canker, were stained with haemotoxylin-eosin and a variety of other stains. It was found that similar changes occurred in all areas where the condition is encountered. The cells of the superficial layer of the sole increased in size and flaked off. At the same time cells of the horn tubules were degenerating. Severe cases were accompanied by hypertrophy and hyperplasia of the laminae and even the third phalanx might be involved. The deeper layers of the sole were found to grow a more resistant type of horn.—C. W. OTTAWAY.

RUNGE, S. (1942). **Contribution on Cow Sterility.**—*Vet. Rec.* **54.** 407–414. **662**

A general discussion on the subject with special reference to the incidence and treatment of sterility in Poland.—N. J. SCORGIE.

*NEWTON, O. M. (1940). Esterilidad de la vaca por adiposis de los órganos genitales. **[Sterility in Cows due to Adiposity of the Genital Organs].**—*J. agron. vet., Univ. B. Aires, 1939.* pp. 433–444. **663**

Studying the part played by adiposis in bovine sterility, N. concludes that:– (a) adiposis is an inherent quality of rapid-fattening breeds of cattle; (b) sterility caused by adiposis is not usually connected with endocrine disturbance; (c) when adiposis affects the genital organs it may cause sterility in a large number of animals because of its interference with sexual function; (d) sterility from adiposis may be controlled by limitation of feeding; (e) iodine therapy may prove useful, but care must be taken to avoid endocrine disturbances, and (f) adiposis as a cause of sterility may co-exist with other abnormal conditions.—MILLER WATSON.

*JUNG, M. (1942). Vorkommen und Pathogenese von Leukoplaken in der Zitze des Rindes. **[Occurrence and Pathogenesis of Epithelial Overgrowths (Warts, Polypi, etc.) of the Teats of Cattle].**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 391]. **664**

Hyperplastic affections of the teats of cattle, such as polypoid growths, warts etc. are often accompanied by abnormalities in the mucous membrane of the teat cistern. Macroscopically, these occur as diffuse whiteish thickenings, so-called "leucoplaques". The histological picture is one of a metaplastic conversion of the lining membrane into a many-layered, stratified epithelium. Trauma appears to be the most important aetiological factor.—M. LANDAU.

PALLASKE, G. (1942). Zur Pathologie der Samenstauung der Ziegenböcke. **[Pathology of Seminal Blockage in Goat Bucks].**—*Dtsch. tierärztl. Wschr.* **50.** 381–385. **665**

Retention of the semen in some part of the genital tract is stated to be among the chief causes of infertility in goat bucks. P. studied the pathology of two cases. The testes appeared normal macroscopically, but microscopic examination revealed evidence of defective spermatogenesis in the form of syncytial clumps of degenerating spermatids.

The most marked changes were found in the head of the epididymis which, on section, showed yellowish foci containing a caseous substance. These lesions consisted of masses of retained spermatozoa which had degenerated and had distended the efferent ducts. There were no signs of any primary inflammatory process which might have led to the occlusion of the lumen. The cause of the condition could not be elucidated, but P. believes that it was in some way associated with changes in the head of the epididymis.—M. LANDAU.

*HÁMORI, D. (1940). **[Heritability of Predisposition to Hernia in Horses].**—*Állatorv. Lapok.* p. 136. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 175]. **666**

The heritability of predisposition to hernia through both mare and stallion was proved in two big studs. The characteristic was recessive in some cases, but manifested itself in 25–50% of the progeny of affected animals, rather more often in the case of horse foals than in fillies. Where the characteristic was recessive it tended to disappear with outbreeding.—A. F. RUSSELL.

JEFFREY, F. P. (1941). **Hereditary Microphthalmia in the Domestic Fowl.**—*J. Hered.* **32.** 310–312. **667**

The bilateral microphthalmia reported in this paper was observed in an inbred strain of Barred Plymouth Rocks and was characterized by an eyeball with a diameter approximately one-half that of normal. At hatching the eyeball was not visible on the exterior. The affected chicks were entirely helpless and it was not possible to rear them; an associated condition was a thickening or doubling of the comb. Test matings indicated that the defect resulted from the action of a single Mendelian recessive gene. This gene may be considered as a true lethal since all the affected chicks died.—N. J. SCORGIE.

NUTRITIONAL AND METABOLIC DISORDERS

*WEGER, G. (1941). Alimentäre Anämie nach Markstammkohlfütterung beim Rinde. **[Nutritional Anaemia in Cattle Fed on Marrow-Stem Kale].**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Jber. Vet.-Med.* **69.** 189]. **668**

Marrow-stem kale fed in large quantities along with a little straw or hay over a long period gave rise to serious anaemia in several herds without affecting the milk yield. Experiments and further observation confirmed this, but in one case a lowering of milk yield was

also observed. The erythrocyte counts and haemoglobin values were both depressed and clinical anaemia was present. After a short period of grazing the animals regained normal health.

Marrow-stem kale in combination with a normal quantity of hay and concentrates induced only a slight anaemia.—Tj. Bakker.

Carlström, B. (1942). Något om kolhydratomsättningens betydelse för de växtätande djurens hälsotillstånd och produktionsförmåga. **[Importance of Carbohydrate Metabolism for Health and Productivity of Herbivora].**—*Skand. VetTidskr.* **32.** 1–17. [English summary]. **669**

An account is given of the conditions which must prevail for normal carbohydrate metabolism, including a discussion on the action of enzymes and the food constituents which must be present to ensure production of the enzymes.

In deficiency diseases of the horse and ox, excellent results were obtained by supplementing the ration with certain vitamins and nucleic acids, especially thiamin and muscle-adenylic acid. As none of them is present in fodder cellulose, when animals are being fed on the latter care must be taken to ensure that they are present in the natural fodder given. If the supply is insufficient, dry yeast may be given as supplement.

*Sjöberg, K., & Jonsson, G. (1941). **[Influence of Molasses Feeding on Metabolism and General Condition].**—*Svensk VetTidskr.* **46.** 311–324. [Abst. from abst. in *Jber. Vet.-med.* **69.** 316]. **670**

Researches on rats showed that increased sugar in the diet results in an increased thiamin requirement. Two horses fed 2 kg. molasses per day showed normal blood pyruvic and lactic acids. Inorganic P was less and phosphatase activity greater than in horses fed only 0·2 kg. molasses. This is doubtless due to increased carbohydrate metabolism. Addition of thiamin and P in the form of yeast and calcium phosphate is recommended when molasses is fed.—J. G. Carr.

Ebbell, H. (1942). Die Perosis. Eine wenig bekannte Stoffwechselkrankheit des Hühner-Kückens. **[Perosis in Chicks].**—*Schweiz. Arch. Tierheilk.* **84.** 336–346. **671**

A review is given of the literature on perosis, which had rarely been reported in Europe before 1940. In 1940, 10–20% of chicks aged 2–3 weeks in a large commercial stock suddenly developed swelling of legs and crippled movement. As the birds were receiving adequate vitamin D the possibility of rickets was excluded and X-ray examination showed no rachitic changes, and perosis was diagnosed on the grounds of changes which had been made in the diet due to war conditions. The most important change was from good quality fish meal or meat meal to a substitute protein food of poor quality with a high mineral content. In spite of efforts to prevent increased occurrence of the disease a great many stocks were affected in 1941 when chicks aged 2–4 weeks were suddenly found to be crippled. As it was feared that more severe outbreaks might occur in 1942 and 1943 it was recommended that for the first four weeks bone meal and meat meal should be withheld and fish meal, dried skimmed milk, or dried yeast given if possible. If bone and meat meal must be given the chicks should be allowed to run free and not be confined in battery brooders. If chicks must be kept under cover, green food should be supplied ; if signs of perosis develop the addition of green food to the ration may cure the outbreak.—A. M. Copping.

*Jakab, P. (1941). **[Variations in Creatine, Creatinine, and Total Nitrogen in Urine of Dogs].**—*Inaug. Diss., Budapest.* pp. 20. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 247]. **672**

The urine of dogs which are fed only on meat contains considerably more nitrogen and creatinine than the urine of animals fed on a mixed diet ; the excretion of creatine, however, is not markedly different. Administration of vitamin C causes an increase in the creatinine and nitrogen content of the urine and a decrease in the creatine excretion. Subcutaneous injection of simple sugars has the same effect as the administration of vitamin C. Muscular exercise leads to an increase in the creatinine content of the urine which is greater than the increase in the nitrogen content. Increase in creatine excretion can only be brought about by muscular activity such as running.—E. R. Pariser.

Totter, J. R., & Day, P. L. (1942). **Cataract and other Ocular Changes Resulting from Tryptophane Deficiency.**—*J. Nutrit.* **24.** 159–166. **673**

Young rats which were provided with a diet deficient in tryptophane developed lesions of the lens resulting in cataract. The nature of the changes was considered to be different from that of either of the two forms of cataract (due to riboflavin deficiency or a diet high in galactose or xylose) which had been previously produced in the same laboratory [see also Day *et al.*—*V. B.* **9.** 887].

Corneal vascularization was produced on lysine-deficient diets also.—Alastair N. Worden.

Underwood, E. J., Shier, F. L., & Beck, A. B. (1940). **Experiments in the Feeding of Phosphorus Supplements to Sheep in Western Australia.**—*J. Dep. Agric. W. Aust.* **17.** 388–405. [Authors' summary copied *verbatim*]. **674**

1. Experiments in the feeding of soluble phosphate supplements to merino sheep on two farms typical of much of the drier agricultural areas of Western Australia, carried out over four successive seasons, two of which were exceptionally poor, are described.

2. Although one of these farms was situated on soils of exceedingly low phosphorus status, no effect of such supplements could be demonstrated at either place on the body weights of mature ewes, the growth of lambs from these ewes, the birth weights of the lambs, the numbers of lambs born, the wool production of either the mature or the growing sheep or on the blood inorganic phosphorus levels.

3. It is concluded that no benefit, economic or otherwise, is brought about in the agricultural areas of Western Australia by supplementing the diet of grazing sheep with phosphatic licks and that the use of such licks by sheep owners is both unnecessary and wasteful.

Durlacher, S. H., Darrow, D. C., & Winternitz, M. C. (1942). **The Effect of Low Potassium Diet and of Desoxycorticosterone Acetate upon Renal Size.**—*Amer. J. Physiol.* **136.** 346–349. **675**

Dilatation, hypertrophy, and hyperplasia of the ascending loops of Henle and of the collecting tubules occurred in the kidneys of rats fed for short periods on diets containing only 1·6 mM (millimols) of K per 100 g. There were considerable increases in both the dry weight and total weight of the whole kidneys. Similar but less severe changes occurred when desoxycorticosterone acetate was injected into rats on normal diets containing about 16 mM K per 100 g., but could be prevented by incorporating 1% of KCl in the ration. Injection of desoxycorticosterone acetate into animals on a low K diet did not increase the severity of the renal changes. A high K diet did not exert any obvious effect upon the kidneys.—Alastair N. Worden.

McKibbin, J. M., Schaefer, A. E., Elvehjem, C. A., & Hart, E. B. (1942). **Studies on Hemorrhagic**

Anemia in Dogs.—*J. biol. Chem.* **145.** 107–122. **676**

The antagonistic action of Co [see FROST *et al.*—*V. B.* **13.** 62.] to the regeneration of the blood of anaemic adult dogs on a whole milk + Fe + Cu diet could be overcome by administration of whole dry liver, of liver extract, or of a mixture of the following substances which individually were inactive :– bile salts, uropterin concentrates, cysteine, and various synthetic B_2 vitamins. The plasma Fe concentration did not, however, rise following administration of the mixture as it did after liver therapy.

In further experiments, four partially grown dogs receiving a diet composed entirely of sucrose, casein, cod liver oil, cottonseed oil, mineral salts and B vitamins, showed a normal capacity for blood regeneration after repeated phlebotomy.—ALASTAIR N. WORDEN.

STILL, J. L. (1941). **Trace Elements and Substances in Biological Processes.**—*Aust. J. Sci.* **4.** 73–75. **677**

A brief review of the functions subserved in the body by substances occurring in minute quantities. S.'s thesis is that the principal function concerned is that associated with biological oxidation, and that the role of certain of these elements and compounds may be that of coenzymes or prosthetic groups of enzymes. Examples are made of the nucleotides, the cytochromes, the flavins, catalase, peroxidase, copper-protein enzymes, thiamin, zinc-protein enzyme, ascorbic acid, glutathione, *p*-aminobenzoic acid, and insulin.

—C. R. AUSTIN.

WOLBACH, S. B., & BESSEY, O. A. (1942). **Tissue Changes in Vitamin Deficiencies.**—*Physiol. Rev.* **22.** 233–289. **678**

In a well documented review of present knowledge concerning the tissue changes associated with vitamin deficiencies in man and animals, the authors give an excellent account of recent work on this important subject, including some hitherto unpublished observations of their own on hypervitaminosis A, and riboflavin and pyridoxine deficiencies. Though concerned principally with the human subject, the review contains much information of veterinary interest and gives many direct references to deficiencies as they affect dogs swine, poultry, and cattle.

The authors summarize by grouping the morphological manifestations of vitamin deficiencies into four main categories, and under those headings the main points may be indicated as follows.

Category I.—Nonspecific consequences expressive of inanition. Here are included effects which are similar to those of starvation as produced by inadequate amounts of a complete diet, *e.g.* retardation of growth, anaemia as exhibited by decreased activity of the haemopoietic tissues, diffuse atrophy of skeletal muscle and various glandular organs, and retarded growth of hair.

Category II.—Effects common to several deficiencies, especially degenerations of the nervous system and, with qualifications regarding distribution and fine details, lesions of the skin. The most important effect in this group is the degeneration of peripheral nerves and spinal cord tracts resulting from thiamin, pyridoxine, and riboflavin deficiencies. A similar type of nerve degeneration is probably present in pantothenic and nicotinic acid deficiencies. The nerve lesions reported as the result of vitamin E deficiency are probably secondary to degeneration of skeletal muscle, while mechanical factors, due to relative overgrowth of the central nervous system, seem to be the cause of paralysis in vitamin A deficiency.

Category III.—Degenerative changes characteristic in kind and distribution, best illustrated by the cerebral lesions of vitamin B_1 deficiency (thiamin), and the degeneration of skeletal muscle and embryonal tissues in vitamin E deficiency. The skin lesions of nicotinic acid, pyridoxine, pantothenic acid, and riboflavin deficiencies and the ocular manifestations of the last come into this category, and the haemorrhages of choline and vitamin K deficiencies may also be included.

Category IV.—Initial specific effects exhibited by striking changes in structural patterns, outstanding in relation to vitamins A, C, and D. In addition to the well known atrophy of many epithelia with replacement by squamous keratinizing epithelium which occurs regardless of age, vitamin A deficiency produces another important effect, of importance only during the period of growth, namely, a retardation of skeletal growth in relation to growth of the c.n.s. resulting in mechanical compression of brain, spinal cord, and nerve roots. Further, excessive amounts of vitamin A appear to cause osteoporosis and considerable bone destruction. The morphological consequences of vitamin C deficiency are practically restricted to tissues of mesenchymal origin, and are apparently due to failure of formation and/or maintenance of the collagen substrate common to supporting tissues, such as fibrous connective tissue, dentin, bone and cartilage. In vitamin D deficiency the structural changes which occur are due to retardation or suppression of normal growth sequences in epiphyseal cartilage in conjunction with a simultaneous failure in calcification of bone and cartilage matrices. Though deficiency of Ca and/or P ions in the blood and extracellular materials is the common factor which produces both these conditions, the chemistry involved in their manifestations may be very different: an enzyme system in cartilage cells, and critical precipitating levels in matrices.

Specific references to diseases in domestic animals include (a) vitamin A deficiency in relation to bony defects leading to blindness in calves and deafness in dogs, and antenatal effects in swine resulting in anophthalmos and developmental arrests in newly born piglets; (b) vitamin D in relation to rickets and osteomalacia; (c) vitamin E deficiency producing low hatchability of eggs, skeletal muscle degeneration in goats and rabbits, paralysis in newly hatched chicks, myopathy in ducklings, and gizzard musculature degeneration in turkeys; (d) vitamin K deficiency in chicks, and the fact that it is not related to "sweet clover disease" of cattle; (e) the nervous symptoms of thiamin (B_1) deficiency in dogs, (f) riboflavin deficiency in dogs, pigs and chicks; (g) nicotinic acid (P-P factor) in relation to dogs and pigs; (h) pyridoxine (B_6) deficiency in chicks, dogs, pigeons and pigs; (i) choline deficiency in relation to liver cirrhosis in dogs and to perosis in chickens and turkeys; (j) pantothenic acid deficiency dermatitis in chicks.—J. LOCHIEL MCGIRR.

HICKS, J. D. (1941). **A Review of the Literature Concerning Haemorrhage in Obstructive Jaundice: The Significance of Prothrombin and of Vitamin K Therapy.**—*Med. J. Aust.* Jan. 11th. 46–51. [Author's summary copied *verbatim*]. **679**

1. No deficiency of calcium in the blood of jaundiced patients has been proven, and the therapeutic effect claimed for the administration of calcium is not fully substantiated.

2. A deficiency in the prothrombin content of the blood plasma may occur as a result of inadequate vitamin *K* in the diet of such animals as chicks, ducklings and young geese; but mammals such as guinea-pigs, rats, dogs and presumably human beings, can live indefinitely on a diet free from vitamin *K* without developing a haemorrhagic tendency due to prothrombin deficiency. It is to be noted, however, that Kark and Lozner (1939) have reported four cases of hypopro-

thrombinaemia in man which appear to be due to dietary deficiency.

3. The prothrombin level of the blood of newly born babies appears to be precariously low until an intestinal flora is established which synthesizes the vitamin.

4. In rats, dogs and human beings exclusion of bile from the intestine prevents absorption of the vitamin and results in prothrombin deficiency after a varying period of time. Other varieties of steatorrhoea, such as sprue or coeli c disease, intestinal fistul , stenosis and granulomatosis, may similarly bring about deficient absorption of the vitamin.

5. Diminution of functional liver tissue, whether from hepatectomy, cirrhosis, toxic degeneration, or carcinomatosis, may cause a lowering of the prothrombin content of the blood.

6. In obstructive jaundice both liver damage and absence of bile from the intestine may play a part. Prothrombin deficiency may be readily demonstrated by simple clinical tests. Effective treatment consists of the administration of bile salts by mouth and the addition of foods or concentrates rich in vitamin *K*. Preparations of the actual vitamin or of closely related substances are more potent. Intramuscular injections of the latter produce a rapid response and are recommended by recent writers.

7. Transfusion of fresh blood is a good method of temporarily raising the prothrombin level of the blood.

WOOLEY, J. G., & SEBRELL, W. H. (1942). **Nutritional Deficiencies and Infection. I. Influence of Riboflavin or Thiamin Deficiency on Fatal Experimental Pneumococcal Infection in White Mice.**—*Publ. Hlth Rep., Wash.* **57.** 149–161. **680**

Young Swiss mice approximately four weeks old were used in these experiments. A basal diet to which various vitamins were added was fed to each group for 14–21 days before their resistance was tested to the intranasal inoculation of pneumococcus culture.

It was concluded that a deficiency of riboflavin or thiamin rendered mice more susceptible to pneumococcus type I infection. The daily administration of 5–10 times the optimum amounts of riboflavin or thiamin, commencing at the time of inoculation, did not decrease the number of deaths in mice which had been fed on diets deficient in these vitamins.—J. F.

HANDLER, P., & DANN, W. J. (1942). **The Biochemical Defect in Nicotinic Acid Deficiency.**—*J. biol. Chem.* **145.** 145–153. **681**

In view of the fact that death in canine blacktongue does not appear to be due to a simple deficiency of cozymase [see DANN *et al.*—*V. B.* **12.** 462.] and that the acute stage of the disease is characterized by a rapid and severe loss of body weight, the authors tested the hypothesis that dehydration and electrolyte imbalance were primary factors in fatal cases. By repeated subcutaneous injection of large doses (up to nearly 10% body weight) of normal saline, it was found possible to obtain remission of symptoms even in moribund animals, and subsequently the majority of cases survived without treatment and on a nicotinic acid deficient diet, for periods of 30–180 days. When death finally supervened, it was not preceded by characteristic "blacktongue" symptoms. The oral administration of NaCl tablets (3 g. daily) resulted in similar, but less rapid recovery: isotonic glucose solutions and a casein digest were ineffective.

Analyses were made of the liver, muscle and renal cortex of dogs subjected to nicotinic acid deficiency: in all cases there was a continued decrease of total and bound nicotinic acid and of diphosphopyridine nucleotide values. Blood analyses, on the other hand, showed that the CO_2-combining power increased and that a return to normal values for plasma protein, non-protein-nitrogen, glucose, and chloride was achieved within two weeks of the remission of symptoms: as the protracted period continued a profound anaemia developed, and as death approached glucose and CO_2-combining power decreased once more.—ALASTAIR N. WORDEN.

NIELSEN, E., & ELVEHJEM, C. A. (1942). **Cure of Paralysis in Rats with Biotin Concentrates and Crystalline Biotin.**—*J. biol. Chem.* **144.** 405–409. **682**

A form of spastic paralysis could be produced in rats by feeding them on a diet containing 10% egg white for a longer period than that necessary for the development of the "spectacled eye" condition [see PAVCEK & BAUM—*V. B.* **12.** 235]. On a diet rich in fat (41% lard), the onset of symptoms was delayed. The condition responded to biotin concentrates and to small doses of crystalline biotin: riboflavin and vitamin B_6 were without effect. The muscles of the biotin-deficient animals were sinewy in appearance, had a normal water content, and contained rather more creatine than those of control rats.—A. N. WORDEN.

MARTIN, G. J. (1942). **The Interrelationship of *p*-Aminobenzoic Acid and Inosital.**—*Amer. J. Physiol.* **136.** 124–127. **683**

Investigations into the true nature of the grey-hair factor or factors showed that on a diet containing six factors of the B-complex (thiamin, riboflavin, pyridoxine, nicotinic acid, choline and *p*-aminobenzoic acid) but deficient in two other factors of the complex (inositol and pantothenic acid), a "spectacled eye" condition appeared within two weeks in black rats on an otherwise adequate diet. The eye condition was bilateral and severe, and rupture of the eyeballs and complete blindness with purulent and bloody exudates characterized the syndrome. It was far more marked than in a straight pantothenic acid deficiency or in a straight inositol deficiency. There was mild alopecia and slight achromotrichia; 90% developed incoordination of movement. Deficiency of inositol only, produced an achromotrichia similar to that caused by a pantothenic acid deficiency. The "spectacled eye" condition and locomotor incoordination developed to a lesser degree than when pantothenic acid was also deficient. Deficiency of *p*-aminobenzoic acid caused death within six weeks with a mild greying and thinning of the hair over the head, and foot lesions were also frequently observed. Pantothenic acid deficiency alone resulted in the usual "spectacled eye" condition and a typical greying pattern accompanied by a mild form of alopecia.

When all eight members of the B-complex were present the rats appeared normal in every way. When the diet contained no inositol and no *p*-aminobenzoic acid they also appeared quite normal, showing that in the absence of these two factors the other six factors *viz*, thiamin, riboflavin, pyridoxine, choline, nicotinic acid, and pantothenic acid, are adequate. Thus addition of inositol precipitates a syndrome prevented by *p*-aminobenzoic acid, and addition of *p*-aminobenzoic precipitates a syndrome prevented by inositol. A discussion on the probable explanation of this reaction between the two factors is given.—R. ALLCROFT.

VON WENDT, G. (1938). C-Vitamin-Studien. C-Vitamin in der Kuhmilch. **[Studies on Vitamin C. Vitamin C in Cow's Milk].**—*Skand. Arch. Physiol.* **80.** 398–402. [In German]. **684**

W. found that the vitamin C content of the milk of healthy cows varied from 15–25 mg. per kg., and was highest in colostrum. Large intravenous doses of ascorbic acid had no influence on the vitamin C content

of the milk, although that in the urine was greatly increased.

A drop in the vitamin C content of the milk was observed in cows with streptococcal infection of the udder and this correlation was so clear that W. believes that estimation of vitamin C would be valuable in the diagnosis of mastitis. From the above observations he concludes that vitamin C in the milk is synthesized in the udder and does not enter it *via* the blood supply. —J. E.

REINEKE, E. P., GARRISON, E. R., & TURNER, C. W. (1941). **The Relation of Mastitis to the Level of Ascorbic Acid and Certain other Constituents in Milk.** —*J. Dairy Sci.* **24.** 41–50. **685**

The results of ascorbic acid and chloride estimations on milk from normal quarters and quarters affected with mastitis, showed that the levels of these two constituents varied with the severity of the infection, the chlorides increasing and the ascorbic acid decreasing. In the early stages of mastitis the ascorbic acid values were reduced by about 10% and in advanced cases were reduced 30–50% and at the same time the chlorides were markedly increased. This inverse relationship between ascorbic acid and chlorides was also observed in milk produced following perfusion of quarters with a hypertonic salt solution. Addition of long-chain streptococci from mastitis milk to sterile milk to which a small amount of crystalline ascorbic acid was added, retarded the rate of oxidation of ascorbic acid *in vitro*. Therefore it is unlikely that the bacteria could be directly responsible for the decrease in ascorbic acid in mastitis milk. It was also shown that mastitis milk did not contain a higher level of ascorbic acid oxidase than normal milk. From these results it is suggested that the reduction of ascorbic acid results indirectly from a change in the selective permeability of the milk-secreting cells in relation to the osmotic equilibrium between blood and milk.

VON WENDT [see preceding abst.] recommended the measurement of ascorbic acid as a diagnostic measure for the detection of mastitis, but these results indicate that the reduction in value is not specific enough especially in the early stages of the infection. —R. ALLCROFT.

*TEPPER, A. E. (1941). **Gizzard Erosions, their Prevalence and Significance.**—*Rep. Md agric. Soc.* **25.** 315–319. **686**

T. states that he has noted gizzard lesions in day-old pheasants and quail. He believes that the incidence of some form of lesion in the gizzards of day-old chicks is very high, and claims that 75% of over 2,000 chicks examined, of various breeds and from various states had some degree of erosion. Details are given of an experiment involving 700 cross-bred or Barred Plymouth Rock chicks, which were divided as day-old chicks into groups on the basis of gizzard lesions and subsequently raised to 12 weeks of age under electric brooders. The Maryland Experiment Station mash was fed. The growth, livability and efficiency of food utilization of the different groups did not bear any apparent relationship to the initial state of the gizzards. T. discredits the statements that gizzard erosion alone is the cause of high mortality, and alleges that good feed and good management form the sole solution to the problem. —ALASTAIR N. WORDEN.

GRANT, J. C. (1942). **Gizzard Erosion in Chickens. [Correspondence].**—*Vet. Rec.* **54.** 494. **687**

G. states that in north-east Scotland, outbreaks of gizzard erosion appear to be due to a dietary deficiency. Controlled trials have not been carried out, but for some years past the condition has been satisfactorily combated by feeding a ration of oatmeal, skim milk, steamed bone flour, and cod liver oil.—ALASTAIR N. WORDEN.

HUPKA, E., & MERZDORF, G. (1942). Die Therapie der Gebärparese. **[Treatment of "Milk Fever"].** —*Dtsch. tierärztl. Wschr.* **50.** 73–75. **688**

An account is given of the treatment of "milk fever" by a single intravenous injection of 40 g. $CaCl_2.6H_2O$ + 15 g. $MgCl_2.6H_2O$ [see also SJOLLEMA & SEEKLES and POSTEL—*V. B.* **7.** 638]. Animals in which symptoms of coma were present responded better than animals showing no signs of coma. When symptoms of paralysis were present without coma, response to a single intravenous injection was not so good, but when this treatment was combined with an intravenous injection of 5–10 ml. vigantol, the result was better. Combination of intravenous and subcutaneous injection of Ca + Mg did not increase the therapeutic effect. —H. BLASCHKO.

See also absts. **504** (general), **593** (vitamin C) **628, 629, 630** (cestode immunity).

PHYSIOLOGY AND ANATOMY

SIBREE, E. W. (1941). **Gas Tensions in the Tissues in Physiologica Conditions.**—*Med. J. Aust.* Jan. 11th. 42–46. **689**

This is a summary of original research covering changes in the gas tension of various tissues due to (a) changes in respiration such as forced breathing and apnoea, (b) changes in the composition of inspired air, (c) changes in the local and general circulation, (d) the effects of food, (e) the effects of fear and excitement, and (f) changes in metabolism such as those occurring during sleep and exercise. Most of the observations were conducted on the rabbit, with occasional studies on the dog and the human subject.—H. B. CARTER.

*WIRTH, D., & KUBASTA, F. (1939). Studien zur artspezifischen Reaktion der hämatopoetischen Organsysteme. VII. Huhn. **[Studies on the Species-Specific Reaction of the Haemopoietic System. VII. Fowls].**—*Folia haemat., Lpz.* **62.** 43–48. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 233]. **690**

The authors give figures regarding the numbers and sizes of the cellular constituents of fowl's blood.

[Note: the earlier parts of this work, on the blood picture of the various farm animals, were published separately in various numbers of *Folia haematologica* and collectively in a paper presented to the 13th International Veterinary Congress—see *V. B.* **10.** 133.—Ed.]—M. LANDAU.

MEIER, E. (1942). Untersuchungen über die parenterale Zufuhr von Traubenzucker beim Rind. **[Parenteral Administration of Glucose to Cattle].**—*Wien. tierärztl. Mschr.* **29.** 430–431. [Only abst. given]. **691**

The blood sugar levels and the amount of sugar excreted in the urine are recorded after intravenous and intraperitoneal injections in cattle of varying amounts of glucose solutions of different concentrations. The effect of giving insulin at the same time as glucose administration was also studied.—J. G. CARR.

NEUMANN-KLEINPAUL, U., & THIELE, E. (1941). Ueber die Zerstörung von krystallinischem Insulin durch überlebendes Blut gesunder Pferde. **[Destruction of Crystalline Insulin by the Blood of Healthy Horses].**—*Arch. wiss. prakt. Tierheilk.* **77.** 36–44. **692**

4 ml. defibrinated horse blood will almost completely inactivate 5 μg. insulin in 14–18 hours, but 10–40 μg. were only partially inactivated.—J. G. CARR.

JONES, D. G., & LAMOREUX, W. F. (1942). **Semen Production of White Leghorn Males from Strains Selected for High and Low Fecundity.**—*Poult. Sci.* **21.** 173–184. **693**

Males of the high-fecundity strain attained sexual maturity at an earlier age as shown by the development of spermatogenesis. They produced a significantly greater volume of semen at 12, 24, and 30 weeks of age. The average weight of the testes in the two groups was not significantly different. The greater semen production in the high-fecundity strain can be attributed to greater testicular activity. This was confirmed by histological studies which showed that at 8–24 weeks of age there were more metaphase plates and more spermatozoa present in the seminiferous tubules of the testes of the high-fecundity strain; after 20 weeks of age, a larger proportion of the tubules was active in these males. This study suggests that semen production in the male and egg production in the female are expressions of comparable genotypes for high and low fecundity.—N. J. SCORGIE.

ANDERSON, J. (1942). **The Hydrogen-Ion Concentration of the Semen of the Bull.**—*J. agric. Sci.* **32.** 298–307. **694**

The mean pH of 221 ejaculates of clinically normal bulls was 6·73 ± 0·020. Significant differences were noted between different bulls. On 32 occasions two ejaculates were collected, the second within a few minutes of the first; the pH of the first averaged 6·73 and the second 6·67, and the latter had also a larger volume, a higher motility, and a greater concentration of spermatozoa. It was found that the more acid the semen, the greater was the concentration of spermatozoa, the higher the degree of motility and the larger the volume of the ejaculate; also the more acid the semen was on collection, the better was the motility retained on storage at 8°–10°C. Semen which retained its motility well became increasingly acid during storage; a change in the pH in the alkaline direction had an adverse effect on motility. The more acid the pH on collection, the less likely was a decrease in acidity during storage. A. suggests that the realization of the importance of the pH of semen opens possibilities of improving the quality of the semen through measures aiming at increasing the acidity of the semen *in vitro* or *in vivo*. —N. J. SCORGIE.

GÖTZE, R. (1942). Hat die künstliche Besamung der Haustiere für das Reich und für die Ostgebiete eine Zukunft? [**The Future Position of Artificial Insemination in Germany and in the "Ostgebiete"**].—*Dtsch. tierärztl. Wschr.* **50.** 326–329. **695**

Advantages and dangers of artificial insemination are discussed. Some of the advantages are that breeding can be carried on with the best animals only, the semen can be introduced into the female genital tract in such a way as to secure the greatest chances for successful implantation, certain transmissible diseases can be avoided by the exclusion of diseased animals, and 800–2,000 instead of 80–200 female animals can be fertilized yearly by a single high-class male animal.

On the other hand, some of the dangers of artificial insemination must also be considered: the widespread use of the method might spread epizootics such as foot and mouth disease as the semen has to be transported from farm to farm; careless storage, dilution, and general treatment of the semen preparation may have serious consequences.

The organization of rapid transport of semen and of its distribution is discussed and the importance of artificial insemination stressed in connexion with the urgent task of regenerating the depleted animal stocks in the "Ostgebiete". Finally, G. urges the founding, in Germany, of an institute which would be solely engaged in studying methods of artificial insemination and the problems connected with it, and in training specialists.—E. R. PARISER.

RADEFF, T. (1941). [**Value of Kustallow's Pregnancy Test in Cows and Buffaloes**].—*Yearb. vet. med. Fac. Sofia.* **17.** 301–318. [In Bulgarian]. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 585]. **696**

After reviewing the physiological and biochemical changes which occur during pregnancy, R. refers to the different pregnancy tests. Kustallow's test is based on the observation that *Paramoecium* is unable to move and finally dies when placed in the urine of pregnant animals. Investigations which R. carried out show that this test cannot, however, be applied to cows and buffaloes as *Paramoecium* is killed in the urine of non-pregnant cows and buffalo-cows as rapidly as in the urine of pregnant animals.—E. R. PARISER.

SACHWEH, P. (1942). Die Vereinfachung des serologischen Nachweises der Stutenträchtigkeit. [**Simplification of Serological Pregnancy Diagnosis**].—*Tierärztl. Rdsch.* **48.** 152–155. **697**

The simplification consists in giving mice one injection of 1 ml. pregnant mare serum instead of 1·4 ml. spread over five injections. 95 comparative tests gave identical results at P.M. examination 96 hours after injection.

Positive results were equally well obtained with the hormones prepared from 0·3 ml. pregnant mare serum all injected at once, the mice being examined P.M. after 96 hours. Hormones were prepared by treating the serum with 97% alcohol and extracting the coagulate with distilled water for 24 hours in a refrigerator. A clear opalescent solution was then obtained by passage through a high-speed centrifuge. This fluid did not contain any albumin and gave a positive reaction after injection.—TJ. BAKKER.

COLE, H. H., & HART, G. H. (1942). **Diagnosis of Pregnancy in the Mare by Hormonal Means.**—*J. Amer. vet. med. Ass.* **101.** 124–128. **698**

The authors discuss the well known biological tests [see *V. B.* **10.** 470.] for the diagnosis of pregnancy in the mare. They describe a new 48-hour rat test based upon the presence of gonadotropin in the blood of the mare, which is, therefore, applicable between the 45th and the 120th days after service. Four immature female rats, 21–25 days old, are each given a single subcutaneous injection of 5 ml. of mare's serum and the result read 48 hours later. Serum from a pregnant mare will cause an increase of at least 100% in the uterine weight over that of the controls. An increase of at least 50% in ovarian weights is equally indicative of a positive reaction. The necessity of using rats of fixed age and known strain is pointed out as there are great variations in size and time of maturity of different laboratory strains.

A survey of the literature shows that the majority of investigators find that tests based on the level of gonadotropin in mare serum between the 45th and 120th days of pregnancy do not have an error in excess of 2%. The present authors consider that some of the apparent false positives obtained during early pregnancy are due to resorption of the foetus or abortion, and state that the error in pregnancy diagnosis from the 140th day to term, based upon the presence of oestrogen in the urine usually falls between 1 and 5%.—N. J. S.

THEELEN, W. (1942). Über die Wirkung des synthetischen Wirkstoffes Sexocretin auf den Geschlechtsapparat der Stute und den Nachweis der Ausscheidung durch den Harn mit Hilfe der Cubonireaktion. **[Action of the Synthetic Oestrogen Sexocretin on the Genital Organs of Mares and Demonstration by Cuboni's Test of its Excretion in the Urine].**—*Wien. tierärztl. Mschr.* **29.** 407–408. [Only abst. given]. **699**

Sexocretin, an oily solution of stilboestrol, was given to mares in doses of 5–50 ml. intramuscularly or 10–30 ml. intravenously. Oestrus was induced by 10–20 ml. intramuscularly, the actual amount varying according to the individual. The oestrus was not identical with ordinary oestrus. The amount and duration of hormone excretion in the urine was variable.
—J. G. CARR.

HAMMOND, J., Jr., HAMMOND, J., & PARKES, A. S. (1942). **Hormonal Augmentation of Fertility in Sheep. I. Induction of Ovulation, Superovulation and Heat in Sheep.**—*J. agric. Sci.* **32.** 308–323. **700**

Single injections of gonadotropic extracts of horse pituitary gland and of pregnant mare serum (200–2,000 I.U.) were found to induce ovulation unaccompanied by heat in anoestrous sheep. These substances were only capable of evoking sexual receptivity in animals having a regressing corpus luteum, while the presence of an active corpus luteum usually suppressed both ovulation and heat. Oestrogens (0·5 or 1 mg. of oestradiol benzoate or stilboestrol dipropionate) produced both ovulation and heat in anoestrous sheep. Administration of horse pituitary to ewes during the breeding season a few days before the corpus luteum was due to regress resulted in superovulation at the succeeding heat. Pregnant mare serum was considerably less effective in producing superovulation.
—N. J. SCORGIE.

ANDERSON, J. (1942). **A Note on the Induction of Oestrus in the Cow With Oestradiol Benzoate.**—*Vet. Rec.* **54.** 318. **701**

A single intramuscular injection of 50,000 I.U. (5 mg.) of oestradiol benzoate has proved highly effective in the induction of oestrus in anoestrous cows. Conception was obtained at the first oestrus after injection in a number of cases (proportion not stated), indicating that the indirect stimulation of the ovary had caused ovulation. A. recommends the removal of the corpus luteum by rectal manipulation as a method for induction of oestrus and believes that oestrogens are necessary only when no corpus luteum is detectable, or when it is impossible to express the corpus luteum.—N. J. S.

MAYER, D. T., ANDREWS, F. N., & MCKENZIE, F. F. (1940). **The Estrin Content of the Follicular Fluid and Urine of the Mare and its Relation to Phenomena of the Estrual Cycle.**—*Endocrinology.* **27.** 867–872. **702**

Sixteen samples of follicular fluid were obtained from 11 mares; the total volume of fluid varied during the cycle and was greatest during oestrus, but the oestrogen content per unit volume remained relatively constant, 18–27 μg. oestrone per ml. The specific gravity ranged from 1·003–1·025, pH from 7·60–8·10, and the protein content averaged 0·57%, but these characteristics showed no correlation with the stage of the cycle.

Examination of 128 urine samples, collected from 24 mares at 2–3 day intervals during the oestrous cycle, indicated that there are two points of maximum excretion of oestrogen in the non-pregnant mare, one at oestrus and the other at 10–15 days post-oestrus. In pregnant mares there was a marked rise in oestrogen excretion about the 26th–30th day of pregnancy.
—ALFRED T. COWIE.

FOLLEY, S. J. (1942). **Non-effect of Massive Doses of Progesterone and Desoxycorticosterone on Lactation. [Correspondence].**—*Nature, Lond.* **150.** 266. **703**

Doses of 10 and 15 mg. of progesterone, 5 and 10 mg. of desoxycorticosterone acetate, and 4 mg. of pregneninolone, were injected into five groups of rats from the sixth day of lactation for ten consecutive days. Seventeen rats were used for the experiment and eight were used as controls. Only in the group given pregneninolone was there any evidence of interference with lactation. It may appear that the generalization proposed by FOLLEY & KON that substances showing mammogenic activity also possess the power to inhibit established lactation is invalidated, but further experiments using higher doses of these steroids are required to determine this.—ALFRED T. COWIE.

BECKS, H., RAY, R. D., SIMPSON, M. E., & EVANS, H. M. (1942). **Effect of Thyroxin and the Anterior Pituitary Growth Hormone on Endochondral Ossification. Species Used: The Rat.**—*Arch. Path.* **34.** 334–357. **704**

Normal female rats injected with 0·005 mg. thyroxin daily for 251 days showed no macro- or microscopic increase in the rate of endochondral ossification in the tibia or rib, whereas injections of bovine anterior pituitary extract, containing the growth hormone, resulted in an increase in body weight and length, and the histological picture of the tibia and rib was one of active endochondral ossification. Injections of both thyroxin and anterior pituitary extract, over a similar period, resulted in a still greater increase in body weight and length; ossification was active but of a more mature type.

Thyroparathyroidectomy resulted in marked dwarfing of rats; this growth defect could be remedied by injections of thyroxin; when injected with anterior pituitary extract these rats showed an increase in the rate of endochondral ossification, chondrogenesis being rather more marked than osteogenesis. The combination of thyroxin and the extract again showed a synergistic response.

A few rats were hypophysectomized 40–90 days after thyroparathyroidectomy; thyroxin was ineffective in repairing the resulting growth defect, but when combined with anterior pituitary extract, growth was restored to normal.

The histological differences in response to the various treatments are discussed; whereas the anterior pituitary extract produced somewhat disproportionate growth, when it was combined with thyroxin a more normal mature picture of endochondral ossification was produced.—ALFRED T. COWIE.

THOMPSON, K. W. (1941). **Antihormones.**—*Physiol. Rev.* **21.** 588–631. **705**

This is a comprehensive review of the literature on antihormones. Experimental evidence is strongly in favour of the view that these antihormones are true antibodies and not antagonistic hormones. Antihormones have been induced by repeated injections of pituitary thyrotropic and gonadotropic hormones, chorionic gonadotropin, ketogenic principle of the pituitary, and prolactin. Antibodies do not appear with crystalline hormones, or with very highly purified preparations, but if these are conjugated with an antigen such as serum-globulin, the hormone then acts as a hapten. Oestrone does not produce antihormones and when used as a hapten, complement-fixing antibodies

are produced but in this case these do not inhibit the action of the hormone.

Antihormones appear soon after the first injection of suitable material and at three weeks the serum is highly active. After injections cease, the antihormone activity disappears in 1–3 months. Antihormones are usually species specific, but if injection of hormones is carried out for long periods, in addition to neutralizing the injected extracts, the antihormones may also inactivate the animal's own pituitary hormones while they are *en route* to the subsidiary endocrine glands.

In hormone therapy the production of antihormones must be avoided by using homologous preparations or products of such sufficient purity that they have no antihormone-producing power.—ALFRED T. COWIE.

*IWANOFF, S. (1941). **[Observations on the Corpus Luteum and Ovary in Sheep].**—*Yearb. vet. med. Fac. Sofia.* **17.** 607–620. [In Bulgarian]. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 544]. **706**

Examination of 3,871 native pregnant ewes showed that the right ovary functioned more actively than the left; 55·2% of all corpora lutea, the average weight of which was 554 mg., were found in the right ovary. A certain relationship seemed to exist between the average number of corpora lutea and the size, *i.e.* the age of the foetus. 2·17% twins were recorded, and in 9·27% of the cases the foetus migrated from one uterine horn to the other.—E. R. PARISER.

TRAUTMANN, A., & SCHREITER, H. (1942). Zur physiologischen Bedeutung der Tonsillen. **[Physiological Significance of the Tonsils].**—*Dtsch. tierärztl. Wschr.* **50.** 361–364. **707**

The tonsils of immature and adult bovines were fed to groups of ducks, hens, and cockerels, controls being given ordinary rations. Birds receiving tonsillar tissue soon began to show retardation of body growth accompanied by disturbances in the development of feathers, comb and wattles. These changes were much more pronounced in birds fed on the tonsils of immature bovines.

In order to explain their results the authors postulate the existence of hormonal substances derived from tonsillar tissue, especially that of young animals whose tonsils have not yet involuted. These secretions are believed to exert a tropic action on the thyroid and pineal bodies, modifying their activities and thus causing the above deviations from the normal.—M. L.

BELIČ, M. (1941). Zwillings- und Drillingsuntersuchungen beim Rind unter besonderer Berücksichtigung der Skelettvariabilität. **[Twins and Triplets in Cattle and Skeletal Variations].**—*Z. Tierzucht. ZüchtBiol.* **49.** 10–96. **708**

The first part of the paper contains a valuable summary of the literature upon multiple births in cattle. The various reported incidences are tabulated, giving a total of 30,499 twins in 2,335,208 births, of which only a small number were monozygotic. The formation of twins, and the influence of breed, inheritance, season, and climate are discussed, as well as reasons for the undesirability of multiple births in cattle and the factors responsible for the variations in twins.

B.'s own material consisted of the skeletons of three pairs of twins and one set of triplets, all monozygotic. On each skeleton, 301 measurements of 44 bones were taken, and the results are given in detail. —J. G. CARR.

*HÜBLER, R. (1942). Kommen perivaskuläre und Gliainfiltrate im Zentralnervensystem bei gesunden Schweinen vor? **[Do Perivascular and Glia Infiltrations Occur in the Central Nervous System of Healthy Swine?]**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 392]. **709**

Perivascular infiltrations are considered significant findings in the diagnosis of swine fever, Aujeszky's disease and porcine encephalomyelitis. In order to determine whether similar lesions can occur in normal animals, H. examined the brains and spinal cords of a number of healthy pigs and found that such infiltrations occurred very rarely. When they did exist they were very much less severe than lesions seen in pigs affected with any of the above diseases.—M. LANDAU.

GRAU, H. (1942). Zur Benennung der Lymphknoten, hier: die Lymphknoten der Beckenwand und des Brusteinganges. **[Nomenclature of Lymph Nodes: Lymph Nodes of the Pelvic Wall and Thoracic Inlet].** —*Berl. Münch. tierärztl. Wschr.* June 12th. 180–181. **710**

The lymph nodes in the region of the external aspect of the sacro-sciatic ligament are named in accordance with their position. As the location of the l.nn. varies in the several species of domestic animals, different names are applied to nodes which are seemingly the same. G. suggests that they be all classed under the single name "external sacral lymph nodes".

A similar confusion occurs concerning the region within the entrance to the thorax, where several groups are arranged beneath the great vessels, about the internal thoracic vessels and dorsal to the manubrium sterni. G. suggests that in the ruminant and horse, the name, as at present used in the pig, "cranial sternal lymph nodes" be employed.—C. W. OTTAWAY.

MCMANUS, J. F. A. (1942). **The Juxtaglomerular Complex.**—*Lancet.* **243.** 394–396. **711**

The term "juxtaglomerular complex" is used by M. to describe a group of apparently specialized structures in close relation to the glomerulus. It comprises a specialized segment of the distal convoluted tubule lying between afferent and efferent arterioles and a portion of the wall of the latter in which the muscle cells are replaced by epithelium-like cells containing granules which can be demonstrated by special staining methods. It appears also that nerve cells and fibres are present in close relation to the terminal portion of the afferent arteriole. Recent work suggests that the specialized afibrillar cells in the arteriole produce a pressor substance and hyperplasia of these cells has been observed in experimental hypertension in the dog and rabbit. A study of the complex in human nephritis might throw light on the pathogenesis of the condition and its relation to hypertension.

The paper describes briefly M.'s own work, previously published in Canada, and also includes a review of the literature.—E. G. WHITE.

See also absts. **546** (body temperature), **651**, **651a** (hormones), **663**, **665** (sterility, **672** (nitrogen metabolism), **678** (general).

POISONS AND POISONING

ENNOR, A. H. (1942). **Oxygen Consumption and Ketone Body Production in the Carbon Tetrachloride and Phosphorus Fatty Livers.**—*Aust. J. exp. Biol. med. Sci.* **20.** 73–80. **712**

Using liver slices and the Warburg manometric technique, E. found a large increase both in oxygen consumption and in ketogenesis of g. pig livers damaged with CCl_4 or phosphorus. The oxidation of added substrate in the form of the sodium salts of fatty acids was not impaired by the presence of marked hepatic

damage. There was no apparent association between the metabolic behaviour and histological findings.
—C. R. AUSTIN.

GANSLMAYER, R., & WINTERHALTER, M. (1942). Ein Beitrag zur Wirkung des Tetrachlorkohlenstoffes. **[Research on the Action of Carbon Tetrachloride].**—*Tierärztl. Rdsch.* **48.** 213–216. **713**

Rats given various doses of carbon tetrachloride subcutaneously showed no consistent series of symptoms. Intraperitoneal injection of 1 ml. per kg. body weight produced necrosis of the liver the next day; fatty infiltration and degeneration appeared on the second day, followed by repair and regeneration which was complete by the sixth day.—J. G. CARR.

HOWELL, G. C. (1942). **Oat Hay Poisoning.**—*Vet. Med.* **37.** 384–386. **714**

The first report of oat-hay poisoning from Kansas, U.S.A. Twenty-seven out of a herd of 350 Hereford steers died after eating approximately 4 lb. of the hay for three days. The presence of potassium nitrate in the hay has been shown to be the cause of oat-hay poisoning [see BRADLEY *et al.*—*V. B.* **11.** 327]. A method of field diagnosis is suggested. The colour of a small quantity of blood drawn into a syringe is examined; in cases of nitrate poisoning the blood is dark chocolate-brown and remains so even after long exposure to air.—N. J. SCORGIE.

ERSKINE, D. (1942). **Sulphonamide Sensitisation.**—*Lancet.* **243.** 568–569. **715**

The oral administration or local application of a sulphonamide compound may be attended by various manifestations of intolerance, which may be due to a direct toxic action of the drug or to some form of sensitization. The symptoms of intolerance may be immediate or delayed. The most common type of immediate symptoms are depression, headache, nausea, and vomiting, all of which tend to disappear as medication is continued. A less common syndrome is associated typically with the treatment of chronic infective foci such as chronic abscesses. In these cases there may occur an erythematous rash or scarlatiniform eruption accompanied by severe nausea, vomiting, and diarrhoea. The intolerance of "chronic cases" can be largely avoided by beginning sulphonamide medication with small doses and increasing to a more effective dose in the second or third day. Delayed symptoms of intolerance are usually the result of an allergic reaction to the drug, and resemble those of serum sensitivity in time of onset and in type of reaction. There may or may not be a skin rash, nausea, vomiting, malaise and pyrexia. These sensitization reactions clear on desensitization by continued therapy, but before this is attempted it is important to make sure that the reactions are due to allergy and not to drug retention, the consequences of which may resemble allergic reactions. Drug retention can be diagnosed easily by the application of Werner's test; this simple test for sulphonamides in the urine is described in detail. The incidence of allergic sensitivity is considerably reduced if chemotherapy is restricted, when possible, to a seven-day period. Another type of sensitivity, due to light, may occur, and it is now recognized that excessive exposure to sunlight should be avoided as far as possible during sulphonamide medication.—D. G. DAVEY.

CLIMENKO, D. R., & WRIGHT, A. W. (1941). **Effects of Continued Administration of Sulfathiazole and Sulfapyridine in Monkeys.**—*Arch. Path.* **32.** 794–817. **716**

Sulphathiazole and sulphapyridine in doses of 0·5–10 g. per kg. body weight per day were administered to monkeys by stomach tube. At a dose level of 0·5 g. per kg. per day, animals given sulphapyridine died on the 13th, 14th, and 24th day of medication respectively. Haematuria was present and pathological changes were found in the kidneys. Monkeys receiving the same dose of sulphathiazole showed no ill effects during the 28 days of medication. One animal of this series, killed on the 29th day, showed no appreciable pathological changes. The difference between sulphathiazole and sulphapyridine disappeared when the dosage was raised; at and above 1 g. per kg. per day, fatalities occurred and severe renal lesions were observed in both series. It is to be noted that the dosage used in these experiments is about 10–200 times the usual therapeutic dosage.—J. M. ROBSON.

NICHOLSON, L. G., & MCCULLOCH, E. C. (1942). **Some Effects of Feeding Phenothiazine to Chickens in Various Amounts.**—*J. Amer. vet. med. Ass.* **101.** 205–209. **717**

Six chickens, each of which received 0·5 g. of phenothiazine daily for 85 consecutive days, showed no changes in body weight, egg production, or haemoglobin concentration. [The dose of 0·5 g. is generally recognized as the maximum daily dose which should be administered to fowls.] A second group of six chickens, each of which received 1·0 g. of the drug daily over a similar period, lost weight and showed a lowered egg production towards the end of the experiment. Two birds of the second group died; one exhibited a ruptured egg yolk, and the other leucosis. A trial was also made of the effect of continued administration of phenothiazine in the food. Two groups of 24 chickens were fed a mash, containing 2 kg. of phenothiazine per ton, for as long as 61 days, without any observed effect on body weight, egg production, or haemoglobin concentration. Adequate controls were kept in each instance.—D. G. DAVEY.

BRITON, N. W., & PALTRIDGE, T. B. (1941). **Preliminary Note on Photosensitization of Sheep Grazed on *Brachiaria brizanthia*.**—*Proc. roy. Soc. Qd.* **52.** 121–122. **718**

All of 12 cross-bred wethers developed photosensitization and icterus, with purulent conjunctivitis, after grazing for 7–8 days on 1 acre of a pure stand of *B. brizantha* [a fodder grass allied to millet]. Loss of condition was rapid and within 11 days six had died, showing marked icterus of all tissues, the gall bladder being congested and filled with mucoid bile.—A. W. B.

*KYSELA, W. (1941). Vergiftungen von Schweinen durch Schimmelpilze. **[Poisoning of Pigs by Moulds].**—*Z. Schweinez.* pp. 9–10. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 347]. **719**

Five cases of poisoning by moulds are reported; n some instances mouldy straw was incriminated, while in others the infection was traced to fruit. Clinically there was some resemblance to swine erysipelas, although pyrexia was not marked. Purple spots were present on the skin of all cases. Treatment included purgation and removal of the faulty articles of diet and bedding, and was successful in each instance.—A. N. WORDEN.

See also abst. **668** (plant poisoning).

THERAPEUTICS AND DISINFECTION

HIRSCH, J. (1942). **The "Sulfanilamide Effect" of Substances Devoid of Sulfo Groups.**—*Science.* **96.** 139–140. **720**

Using a 24-hour culture of *Bacterium coli* in synthetic medium for test purposes, H. found the bacteriostatic effect of *p*-aminobenzamide to be almost

as strong as that of an equimolecular quantity of sulphanilamide, both effects being suppressed by *p*-aminobenzoic acid. A similar bacteriostatic effect was produced by *p*-aminophenylarsinic acid (atoxyl), though in this case the action was considerably less effective than that with either sulphanilamide or *p*-aminobenzamide.—J. LOCHIEL MCGIRR.

HAMBURGER, M., Jr., SCHMIDT, L. H., RUEGSEGGER, J. M., SESLER, C. L., & GRUPEN, E. S. (1942). **Sulfonamide Resistance developing during Treatment of Pneumococcic Endocarditis.**—*J. Amer. med. Ass.* **119.** 409–411. **722**

A patient with an ultimately fatal type VII pneumococcus endocarditis was treated with sulphapyridine intermittently over a period of six months. The pneumococci isolated at intervals during this period showed a progressive increase in sulphonamide resistance. The organisms isolated prior to treatment were unable to multiply in media containing more than 2·5 mg.% of sulphapyridine, whereas those isolated after five months of treatment could grow in the presence of 80 mg.% of this drug.—J. M. ROBSON.

SEELEMANN, M. (1942). Wirkung neuer Sulfonamide auf Streptokokken verschiedener serologischer Gruppen. [**Action of New Sulphonamides on Streptococci of Various Groups**].—*Dtsch. tierärztl. Wschr.* **50.** 221–226. **721**

The bactericidal actions *in vitro* on cultures of streptococci of the serological groups A, B, C, D, and L (glucose-broth and glucose-agar and blood-agar cultures) of various sulphonamides were tested. The sulphonamides were :– tetracid (sulphamethylthiodiazole), globucid (sulphaethylthiodiazole), cibazol (sulphathiazole), and sulphapyridine used in concentrations of 1 : 500, 1 : 15,000 and 1 : 50,000. It was found that the haemolytic streptococci of man and animals (groups A and C) were most sensitive ; the groups B, D, and L were less inhibited. The cultures of group D (*Str. faecalis* and *liquefaciens*) were least affected. Twelve strains of group A (*Str. pyogenes* of human origin) were completely inhibited in globucid broth at 1 : 50,000. In tetracid broth at 1 : 50,000, 11 out of 12 strains were completely inhibited ; one was strongly inhibited. The same strain showed some growth in cibazol broth 1 : 50,000, the remaining 11 strains being completely inhibited. In sulphapyridine broth five out of 12 strains showed some growth. The agar cultures gave similar results.

Twelve strains of group C (*Str. pyogenes* of animal origin) gave complete inhibition in broth cultures with tetracid, globucid, and cibazol at 1 : 50,000. In sulphapyridine broth at 1 : 50,000, three out of 12 strains showed some growth.

Twelve strains of group C (*Str. equi*) were less strongly inhibited : only two strains were inhibited by all drugs in broth cultures of 1 : 50,000 ; the remainder showed some growth in all media.

Six strains of group C (*Str. pyogenes-equi*) were at first all inhibited ; after four days some growth occurred in cibazol and sulphapyridine, but not in globucid and tetracid.

Of six strains of *Str. dysgalactiae* (which has been shown serologically to fall into group C) two were only partly inhibited in all media, one showed some growth in sulphapyridine but not in the other media, and three were completely inhibited.

On agar cultures it was found that the bacteriostatic effect was less strong than in broth cultures and the strains of *Str. equi* showed little inhibition of growth. The strains of group B (*Str. agalactiae*) and group L (*Str. lactis*) were less strongly inhibited.—H. BLASCHKO.

LAWSON, T. L. (1942). **Trypanosomiasis Treated with 'Pentamidine '.**—*Lancet.* **243.** 480–483. **723**

Fifty-three human cases of Gambian trypanosomiasis were treated with 4 : 4′-diamidinodiphenoxypentane (M & B 800 or pentamidine). The drug was dissolved in sterile distilled water in the proportion of 10 mg. per ml. of water, and the solution injected intravenously in amounts up to 10 ml. (0·1 g. of drug). In most cases injections were repeated daily for 10 days. Toxic symptoms were manifest in 36 cases immediately following injection of the drug, but they were mostly of a minor character such as increased pulse rate and a feeling of heat all over the body, and they were transient. A tendency to nausea and vomiting was greatly reduced by making the patients take copious draughts of cold water while the drug was being given. In no case was there any evidence of perivenous inflammation, and it is concluded that, as it is unlikely that about 600 intravenous injections (some to children) were given perfectly, the drug cannot therefore have any seriously harmful effect on the subcutaneous tissues. The treatment produced a rapid sterilization of the peripheral blood and of lymph node juice, and L. considers that the drug is probably the best yet discovered for early cases of sleeping sickness. It is not satisfactory, however, for the treatment of advanced cases in which the central nervous system is seriously involved.—D. G. D.

—. (1942). **Treatment of Piroplasmosis of Horses with Pirevan.**—*J. R. Army vet. Cps.* **14.** 25–26. **724**

Pirevan is recommended for equine piroplasmosis in place of acaprin, the toxicity of which is greater. Horses are injected first with 6 ml. of a 5% solution of the drug and then, four hours later, with 4 ml. The corresponding doses for mules are 5 ml. and 3 ml. respectively. Toxic effects are transient, and rarely more than slight.—D. G. DAVEY.

LYAPUSTIN, A. K. (1941). Terapiya ikterohemoglobinurii krupnovo rogatovo skota. [**Treatment of Bovine Icterohaemoglobinuria**].—*Dokl. vsesoyuz. Akad. sel'skokhoz. Nauk.* No. 3. pp. 38–41. **725**

Treatment is discussed of *Leptospira icterohaemoglobinuriae* infection [see also SEMSKOW—*V. B.* **12.** 338.] with arsenic preparations such as salvarsan, silver salvarsan, novarsenol, atoxyl and arrenal, with blood transfusion, combined therapy with ichthyol, sodium salicylate, and urotropine, and symptomatic treatment. Negative results were obtained in severe and advanced cases, mainly due, in L.'s opinion, to failure of the above methods to arrest haemolysis. Promising results were obtained with the silver ammonium preparation ammargen, which was found by TERSKIKH & EGOROV (1936) to be a potent leptospirocide. L. observed recovery in six out of seven severely affected calves. In his opinion, ammargen possesses strong antihaemolytic properties. The dose recommended is 1 mg. per kg. body weight, given as two intravenous injections within 2–3 hours of a 1 : 1,000 solution.—A. M.

CAREY, L. D. (1940). **An Effective Power Spray for Farm Animals.**—*Qd agric. J.* **54.** 442–447. **726**

Power spraying of cattle and horses as a measure of tick control has been proved in practice to be both effective and economical. Plans and specifications of an effective unit are presented for the benefit of stockowners.—H. B. CARTER.

I. GORKINA, A. N. (1942). Dusty iz preparatov "K", "SK" i difenilamina kak insektitsidy. [**Dusts of "K" and "SK" Drugs and of Diphenylamine as Insecticides**].—*Med. Parasitol., Moscow.* **11.** No. 1/2. 90–91. **727**

II. SOBOLEVA, N. I. (1942). Vliyanie antipedikulina "SK" na zhiznennye funktsii vsheĭ. [**Effect of "SK" Insecticide on Lice**].—*Ibid.* 91–93. **728**

I. A powder containing the preparations "K", "SK", and diphenylamine was found to be effective against human lice when dusted into the clothing. Tables give an indication as to the quantities of the powder needed for delousing different kinds and quantities of clothing. [There is no indication as to the composition of "SK" and "K". Only one "SK" preparation is mentioned, called "SK-47" and containing 47% Cl.]

II. Tests of "antipediculin SK" against human lice showed that most females lost their capacity to lay eggs after having stayed for more than 90 min. on fabric impregnated with a 1% soap and water emulsion. No eggs were ever laid after two hours' exposure. The feeding reactions and capacity of the insects had markedly decreased after 90 min., and after two hours they were paralysed. Exposure to a 2% emulsion of the insecticide killed many of the insects in 90 min., and all after two hours.—E. R. PARISER.

ROSENBERGER, G., & SLESIĆ, M. (1942). Distol oder Igitol zur Leberegelbehandlung? **[Comparison of Distol and Igitol in the Treatment of Liver Fluke Disease].**—*Dtsch. tierärztl. Wschr.* **50.** 30–33. **729**

The authors state that if, in addition to ordinary control measures, cattle are dosed once a year (in January) the disease is brought completely under control.

This article records the results of trials with two proprietary preparations, "distol comb." (a hexachlorethane and filix-mas preparation) and "igitol" (a hexachlorethane preparation). They were each used to treat comparable groups of cattle, a proportion of which were passing fluke eggs in the faeces. No clinical cases were treated. Results (based on faecal examinations made at intervals after treatment) showed both products to be equally effective. Hexachlorethane alone is regarded as preferable as it requires a single dose only and is cheaper than filix-mas which requires two or three administrations. Cases of retained placenta occurred in cows and heifers close to calving at the time of treatment with "distol comb." and it is suggested that dosing of any animals due to calve within a week should be deferred until after calving.—H. E. HARBOUR.

MCCULLOCH, E. C. (1942). **Phenothiazine-Medicated Pellets for Range Sheep.**—*J. Amer. vet. med. Ass.* **101.** 114–119. **730**

The author points out that, contrary perhaps to expectation, range sheep of the western U.S.A. are frequently infected with large numbers of intestinal nematodes, *Haemonchus*, *Ostertagia*, *Trichostrongylus* etc. This is largely a consequence of the sheep grazing chiefly around artificial watering and bedding places, and of the fact that the sheep are often removed to special late summer pastures of restricted extent. Under western U.S.A. conditions, individual medication of the animals is rarely feasible, and a practicable method of giving phenothiazine in food mixtures was therefore sought. Machines already present on the feeding grounds, which are ordinarily used for making pellets of concentrates, were used to make pellets containing the drug. The mixture consisted of 15 parts phenothiazine, 30 parts very finely ground oats, 45 parts pea products meal (a concentrate), and 10 parts molasses. This mixture, when completed, was forced under pressure through perforations ½ in. in diameter. Without oats the pellets crumbled, and without molasses the sheep refused to eat them. Sheep unaccustomed to being offered pellets were given pellets lacking phenothiazine for 3–4 days before medication commenced. Results following the feeding of the pellets were satisfactory; in fact, in one experiment, the contrast between treated animals and controls became so marked that the owner of the sheep insisted on the controls being treated before the experiment was really finished. In other trials, sheep which were too ill to justify pellet medication were given a mixture prepared from 15 lb. of phenothiazine and 12 lb. of stock-feed molasses. The mixture, kneaded into a dough, was spread out and cut into pieces each containing about 20 g. phenothiazine which were hand fed to sheep. Results were again satisfactory.—D. G. DAVEY.

SWALES, W. E. (1941). **Control of Certain Parasitic Worms in Sheep. The Prevention and Control of Nodular Disease and Parasites of the Stomach and Intestines of Sheep by Phenothiazine Compound Tablet.**—*Spec. Pamphl. War-time Prod. Ser. agric. Supplies Bd, Can.* No. 51. pp. 4. **731**

In this leaflet, prepared for the Canadian Ministry of Agriculture, the procedure is outlined whereby, under Canadian conditions, stomach worms, certain intestinal worms, and oesophagostomes may be very adequately controlled in sheep with the assistance of phenothiazine and the climate. The severity of the Canadian winter eliminates the vast majority of eggs and larvae from the pastures, and so the great importance of dosing animals before they go to pasture in the spring is stressed. The doses which are recommended are of general interest. In winter or spring treatment, animals up to 100 lb. in weight are given 37·5 g. of phenothiazine (three 12·5 g. tablets); those over 100 lb. are given 50 g. (four tablets). In the summer and autumn treatment, grown animals receive 37·5 g. and lambs receive 25 g. The sheep are penned for dosing, and are not released for at least 24 hours afterwards.—D. G. DAVEY.

LENTZ, W. J. (1941). **The Treatment of Filariasis (Heart Worm) with a New Antimonal Compound (Lithium Antimony Tartrate).**—*Vet. Ext. Quart. Univ. Pa.* No. 84. pp. 3–6. **732**

The anthelmintic action of lithium antimony tartrate against *Dirofilaria immitis* was studied in 34 experimental dogs. The compound, which was in liquid form, was administered intravenously, except in three cases when it was introduced intraperitoneally. Treatment began with an initial dose of 1 ml. and was increased daily by 0·5 ml. until intolerance was manifest, after which treatment was discontinued for several days. On resumption of treatment the maximum dose, given daily, was 0·5 ml. less than that which had produced intolerance, although in some cases the dose was gradually increased. With each injection, a corresponding amount of distilled water and 50% dextrose was added. The dose required to give three negative blood tests for microfilariae, made 3–5 days apart, varied between 4·5 ml. and 39·5 ml. with an average of 14·78 ml. of the compound. Beagles appeared to be the most tolerant to uninterrupted treatment followed, in order of tolerance, by Welsh foxhounds, American foxhounds, German shepherd dogs, Irish setters, and an English setter. To three beagles the compound was given intraperitoneally diluted with 5–10 ml. of distilled water and 50% dextrose in equal amounts; an average of 7·16 ml. of the chemical was required by this method in order to obtain negative blood tests.—J. N. OLDHAM.

DAHMEN, H. (1942). Über die Wirkung eingeatmeter Chlorsilberdämpfe auf Erkrankungen der oberen Luftwege. **[Action of Inhaled Silver Chloride Vapour in Diseases of the Upper Respiratory Tract].**—*Tierärztl. Rdsch.* **48.** 252–254. **733**

An account of experiments on the inhalation of vaporized silver chloride for the cure of fowl pox (no effect), infectious coryza of fowls (some value obtained), and of infectious catarrh in three horses (some effect claimed).—H. BLASCHKO.

LIU, S. H., & CHU, H. I. (1942). **Treatment of Renal Osteodystrophy with Dihydrotachysterol (A.T.10) and Iron.**—*Science.* **95.** 388–389. **734**

Osseous disorders arising from renal insufficiency, and characterized by poor Ca absorption and large excretion of P by the bowel, are claimed to respond to treatment with dihydrotachysterol and with large doses of iron.—J. P. GARDNER.

*WILDHAGEN, A. (1942). Eigenblut als Hämostyptikum. [**The Use of the Patient's Own Blood as a Haemostatic for Haemorrhage in Horses**].—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 389]. **735**

In experiments on 12 horses the value of the patient's own blood as a haemostatic was tested. The styptic effect was most marked 6–8 hours after subcutaneous injection, it lasted 60 hours and disappeared after 6–7 days. The coagulation time during this period was decreased by 60–75%. The optimum dose appeared to be 150 ml. Injections can be given prophylactically prior to operations, and as a therapeutic in otherwise uncontrollable haemorrhage. Multiple doses are well tolerated.—M. LANDAU.

I. MITCHELL, G. A. G., & BUTTLE, G. A. H. (1942). **Proflavine Powder in Wound Therapy.**—*Lancet* **243.** 416–419. **736**

II. ANON. (1942). **Wounds and Flavines.**—*Ibid.* 429–430. **737**

I. Proflavine (2 : 8-diaminoacridine sulphate) powder has been used in 80 cases as a dressing for intractable wounds, with beneficial results in almost every case. The drug was used in pure form (usually 0·5 g. or less, not more than three times at intervals of 4–28 days) and was found to be much less toxic than acriflavine. Where staphylococci were the infecting organisms, proflavine proved more efficient in controlling or eliminating infection than any other drug so far tried. With the possible exception of one case, no interference with healing was noted. Most patients found the dressing painless, and no general toxic effects were noted.

II. Investigations on the effect of various antiseptics on the brain showed that acriflavine was highly toxic while proflavine produced little or no toxic effects. Another acridine compound (2 : 7 diaminoacridine hydrochloride) appears to be even less toxic than proflavine and deserves consideration.—J. M. ROBSON.

HAWKING, F. (1942). **Effect of Sulphonamide Preparations on Experimental Infected Wounds.**—*Lancet.* **243.** 507–510. **738**

The experiments were performed on wounds made by incising the skin and the hamstring muscles in rabbits. The persistence of a sulphonamide in a wound could be prolonged by incorporating sulphanilamide in an oily medium or by using a less soluble sulphonamide such as sulphathiazole or sulphapyridine. Therapeutically, in the prevention of streptococcal septicaemia, the best results of all were obtained with a preparation of sulphathiazole consisting of microcrystals suspended in saline. With sulphanilamide, which is more soluble and more rapidly absorbed, better results were obtained with oily preparations than with aqueous ones. Histologically, the presence of an oil in the wounds caused undesirable tissue reactions. Cod liver oil was especially bad in this respect, liquid paraffin was moderately bad, while cottonseed oil was the least harmful.—J. M. R.

DE VIDAS, J., & MCEACHERN, A. C. (1941). **A Biochemical Investigation of the Tannic Acid and Sulphanilamide Treatment of Burns.**—*Med. J. Aust.* Oct. 25th. 470–474. **739**

An account of the treatment of 11 persons with 7·5% sulphanilamide in 4% tannic acid jelly, which had similar coagulum-forming properties to tannic acid jelly and was non-irritant. Details are given of the absorption of the sulphanilamide in these patients. Clinical results were good, but possibly not better than those following tannic acid treatment alone.—A. W. B.

See also absts. **688** (treatment of milk fever), **712, 713, 717** (toxicity o anthelmintics), **715, 716** (sulphonamide toxicity).

HYGIENE AND PUBLIC HEALTH

MATTHEWS, H. T. (1942). **The Technique of Microscopical Examination of Milk for Tuberculosis.** pp. 7. Knowle, Warwickshire: Society of Veterinary Practitioners. [4to] [1s.] **740**

An illustrated technical account for the benefit of veterinary practitioners.—J. E.

GINSBERG, A. (1941). **Meat Inspection and the Veterinary Profession in Poland before 1939.**—*Vet. Rec.* **53.** 459–464. **741**

G. notes that it was not until after the war of 1914–18 that the two veterinary colleges were founded, at Warsaw and Lwow, and the previously existing unorganized veterinary service was reorganized. Unified meat inspection was aimed at, one law dealing with this and another with abattoirs. By 1939 each town, except a few with private abattoirs, had its own municipal abattoir designed on modern lines. Special instruction was given to veterinarians in inspection techniques and in business methods to enable them to manage these abattoirs. From 1936, lay inspectors who were previously responsible for inspecting some of the meat, worked under the direct supervision of veterinarians.

Average remunerations of members of the veterinary profession and an outline of Polish meat-inspection laws are detailed, and an account of the *Freibank* disposal of inferior and "provisionally fit" meat is given. A few statistics of major disease condemnations in 1935 are given together with the rules governing seizure. —C. V. WATKINS.

WOLFFRAM, N. (1941). Versuche zur Verbesserung der Löfflerschen Malachitgrünplatte und Prüfung ihrer praktischen Brauchbarkeit für den Fleischvergifternachweis, insbesondere gegenüber der Brillantgrün-Phenolrot-platte. [**Attempts to Improve Löffler's Malachite Green Medium and Tests of it for the Demonstration of Meat Poisoning Organisms in Comparison with the Brilliant Green + Phenol Red Plate**].—*Z. InfektKr. Haustiere.* **57.** 220–238. **742**

For the detection of poisoning organisms in meat and faeces, Löffler's malachite green plate gives good results, but does not differentiate well between *Bacterium coli* and meat poisoning organisms. W. therefore tried the effect of adding phenol red (4%) and lactose (1·5%) and tested the medium along with various modifications of Kauffmann's brilliant green + phenol red plate on 2,724 samples of meat, 489 of bovine faeces and four of pond water.

Results showed that the new malachite green + phenol red plate [M.G.P.R.] proved a more efficient check to the growth of bacterial contaminants than the brilliant green + phenol red plates [B.G.P.R.], and gave a stronger growth of salmonella. The organisms grew

well on all plates as rose-red, distinct, translucent colonies, while *Bact. coli* colonies are green on M.G.P.R. medium, and greeny-yellow and of cloudy and sometimes slimy consistency on B.G.P.R. plates. Both M.G.P.R. and B.G.P.R. plates possess greater inhibitory powers against adventitious bacteria and give better differentiation between *Bact. coli* and salmonella colonies than do either Drigalski's or Gassner's plates. —O. D. JAMES.

See also absts. **510**, **511** (anthrax), **627** (hydatid).

TECHNIQUE AND APPARATUS

SEIFFERT, G. (1942). Zur Vereinfachung der Diagnose pathogener Bakterien. (Fuchsin-Zuckernährboden—Mikromethode.) **[A Simple Method for the Detection of Pathogenic Bacteria (Fuchsin-Sugar Media—Micromethod)].**—*Zbl. Bakt. I. (Orig.).* **148.** 310–314. **743**

The biochemical reactions of an organism can be determined with a minimal expenditure of time and material by inoculating blobs of media containing the required sugars and an indicator placed on the bottom of a single petri dish. A blob of ordinary medium will give material for serological tests, etc., from the same dish. The method is especially suited for field laboratories.—J. G. CARR.

DETTMANN, E. O. (1940). Bakterienersatznährböden aus Süss- und Bitterlupinenmehl. **[Sweet and Bitter Lupin Meals as Substitute Culture Media].**—*Arch. wiss. prakt. Tierheilk.* **76.** 139–149. **744**

Continuing the work of BRANDT [(1938). *Zbl. Bakt. I. (Orig.).* **142.** 316–322.] in attempts to find a suitable source of vegetable protein as a substitute for animal protein in the cultivation of bacteria, D. compared sweet lupin meal, bitter lupin meal, and horse-flesh broth with and without the addition of peptone and both as liquid and as solid media. Economically, bitter lupin meal is preferable for, having a high alkaloid content, it is not suitable for animal feeding. The media were tested for any inhibitory effect on growth, biological and biochemical reactions, virulence, staining ability and pigment production. A considerable range of organisms was included. It was found that bitter lupin meal is as suitable as sweet lupin meal and that no peptone is needed; growth and biochemical activities were uninfluenced. The virulence of *Erysipelothrix rhusiopathiae*, however, was found to diminish quickly when grown on bitter lupin meal media and also on sweet lupin meal, but on the latter medium virulence was later restored. Details are given of the preparation and most suitable methods of sterilization of the media.—D. L. R.

DOSCH, F. (1942). Darstellung der Bakterienhüllen mit dem Chemotherapeuticum Prontosil solubile. **[Demonstration of Bacterial Capsules with Prontosil Soluble].**—*Zbl. Bakt. I. (Orig.).* **149.** 56–60. **745**

Unfixed smears of various unspecified bacteria were stained with 2·5% prontosil soluble for 2 min. and blotted dry. Surrounding a stained bacterial body appearing smaller than in ordinary stained preparations (endoplasm) was an unstained zone (ectoplasm) and then a diffusely stained zone representing the polysaccharide capsule. The relation of this finding to chemotherapeutic studies is discussed.—J. G. CARR.

BEKKER, J. H., & TASMAN, A. (1941). Über den Zusammenhang zwischen der Säurefestigkeit und dem Fluoreszenzvermögen des Tuberkelbazillus. **[Connexion between Acid-Fastness and Fluorescent Property of Tubercle Bacilli].**—*Arch. Hyg., Berlin.* **127.** 7–9. **746**

It was found that acid-fastness and fluorescent property were both lost after tubercle bacilli had been subjected to the action of alcohol, ether, or chloroform, which remove the lipoid material of the bacterial bodies. —J. E.

GINGRICH, W. D. (1941). **Permanent Stained Preparations of Thick Blood Films.**—*Stain Tech.* **16.** 159–164. [Author's abstract copied *verbatim*]. **747**

Fixing thick films in alcoholic solution of dye after the usual staining-and-laking procedure preserves the appearance of parasites and blood elements very similar to that of the usual thick films (not fixed) for the diagnosis of malaria and relapsing fever.

Procedure recommended: Films are stained and laked for 15 minutes in diluted Giemsa—1 to 3 drops of stock solution (0·4 g. in 60 ml. equal parts absolute methyl alcohol and glycerin) per ml. distilled water; rinsed in water and allowed to dry. They are then immersed in, or flooded with, May-Grünwald's stain (0·5% in absolute methyl alcohol) for 30 seconds, rinsed in water and allowed to dry. Solutions of MacNeal's tetrachrome stain in methyl alcohol and glycerin may be substituted for Giemsa and a solution in methyl alcohol may be substituted for May-Grünwald. With slight modification of the procedure, both thick and thin films on the same slide may be stained together.

Films stained and fixed as described, and mounted in Diaphane, have shown no evidence of fading in 3 years.

LILLIE, R. D., & ROE, M. A. (1942). **Studies on Polychrome Methylene Blue. I. Eosinates, their Spectra and Staining Capacity.**—*Stain Tech.* **17.** 57–63. [Author's abstract copied *verbatim*]. **748**

The absorption spectra of eosinates of thiazin dyes in water exhibit absorption maxima at the same spectral locations as do the individual component dyes in aqueous solution.

Commercial samples of Wright's stain showing thiazin absorption maxima between 620 and 660 mμ generally give satisfactory blood stains. Nuclear staining is redder and cytoplasm grayer blue in 620–640 range, and consequently staining of malaria parasites is less satisfactory in that range. The best malaria stains show their thiazin absorption maxima usually between 650 and 660 mμ.

Successive batches of Wright's stain made by the same manufacturer, as well as experimental laboratory lots, may show wide variations in their thiazin absorption maxima and in their staining characteristics.

LILLIE, R. D. (1942). **Studies on Polychrome Methylene Blue. II. Acid Oxidation Methods of Polychroming.**—*Stain Tech.* **17.** 97–110. [See also preceding abst.] **749**

Various samples of methylene blue, when heated with equal amounts of potassium dichromate in acid solution, yield very similar products and when larger amounts of dichromate are used, quantitatively greater changes are produced. When polychroming with potassium dichromate in acid solution at 100°C., the process is completed in 15 min. and no change occurs when the heating is prolonged. The actions of silver oxide, potassium permanganate, mercuric oxide and sodium iodate in polychroming methylene blue were also examined. HgO and $NaIO_3$ in acid or neutral solutions produced no polychroming at 100°C. In the case of the other reagents, polychroming as estimated by the shift in the absorption spectra roughly coincides with the quantity of oxidant used. Little change in methylene blue was observed when $KMnO_4$ in 0·1% H_2SO_4

solution was used, but if the H_2SO_4 was increased to 1·1% it was found that polychroming occurred which was proportional to the quantity of $KMnO_4$.—C. H. S.

*LEHRKE, K. (1941). Vergleichende Untersuchungen mit verschiedenen Flotationsmedien zur Wurmdiagnose bei unseren Haus- und Nutztieren. [**Comparison of Flotation Methods in the Diagnosis of Helminthiasis in Farm Animals**].—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 151]. **750**

Investigations were made to determine the comparative efficiency of various solutions as flotation agents. Sugar solution was best for nematode eggs, coccidial oocysts, and *Balantidium* cysts. Potassium mercuric iodide was as good as sugar solution while salt solution gave poor results. Fluke eggs were floated by waterglass, potassium mercuric iodide, and concentrated potassium carbonate solution. This latter solution diluted 1 : 1 with water floats *Ascaridia* and *Capillaria* eggs from poultry faeces better than does potassium mercuric iodide or glycerin. By treating poultry faeces with 5% caustic potash for half-an-hour the usual 24-hour fermentation of the faeces may be dispensed with.—A. L. WILSON.

ANON. (1939). **Microscopic Diagnosis of Parasitism in Domestic Animals.**—*Circ. Ill. agric. Exp. Sta.* No. 496. pp. 123. **751**

This circular, which replaces one by the same title (No. 401) published in 1933, has been enlarged by additional photographs and diagrams. The textual matter deals with the need for microscopic examinations for parasitic infestations and the necessary apparatus for, and the methods of, collecting and preparing skin scrapings and faecal specimens for microscopic examination. The bulk of the publication consists of life-history diagrams of selected parasites and photographs of adult helminths and their eggs, coccidia, lice, and mites affecting pigs, horses, cattle, sheep, poultry, dogs, cats, and rabbits. Reference lists of 35 titles and an adequate index are included.—J. N. OLDHAM.

SUMMERS, W. A. (1942). **A Modification of Zinc Sulfate Centrifugal Flotation Method for Recovery of Helminth Ova in Formalinized Feces.**—*J. Parasit.* **28.** 345–346. **752**

The incidence of helminth infections revealed by Faust's original zinc sulphate centrifugal-flotation technique was compared with the results obtained with a modification of this method and with Willis' brine-levitation method. The modification comprised the use of a zinc sulphate solution of specific gravity 1·200 instead of 1·180, and omission of the cheesecloth straining and the second washing prescribed in the original method. In a preliminary series of 100 faecal samples examined by the original method and by the brine method, the latter revealed 50% more positive hookworm specimens than the former method, which did not reveal any positive specimens not found by the Willis technique. In a second series of 1,222 samples, examined by the Willis method and the modified zinc sulphate method, the brine method revealed only 1·2% more hookworm cases than the modified method.—M. L. B.

*KAUSCHE, G. A. (1940). Ergebnisse und Probleme der experimentellen Virusforschung bei Pflanzen (mit übermikroskopischen Aufnahmen). [**Value of the Electron Microscope in the Study of Plant Viruses**].—*Ber. dtsch. bot. Ges.* **58.** 200–222. [Abst. in *Stain Tech.* **16.** 179, copied *verbatim.* Signed: Merritt N. POPE]. **753**

The writer discusses the value of the electron microscope in the study of plant viruses. He points out that at a magnification of 16,000 diameters the so-called Stanley crystals appear to consist of bundles of smaller units arranged parallel to the long axis. These smaller units have dimensions within the range demanded of virus molecules. The reaction of the virus with colloidal gold is shown in photographs. At the neutral point no reaction occurred. The addition of NaCl caused flocculation, while a gold sol acidified with HCl showed the gold particles laid down singly in the virus molecule or its aggregate. When an alkali is added, dispersion takes place due to the disintegration of the virus.

METTLER, F. A., & HANADA, R. E. (1942). **The Marchi Method.**—*Stain Tech.* **17.** 111–116. **754**

The Marchi method as used for the central nervous system has never been thoroughly satisfactory owing to the poor penetration of the osmium-bichromate mixture. Attempts made to improve the penetrating power by employing surface tension depressants and perfusion techniques proved unsuccessful. For satisfactory staining, tissues should not exceed 3 mm. in thickness and a sufficient strength of osmic acid should be maintained, never falling below 0·25%. Twenty times as much osmium-bichromate mixture as tissue volume to be stained should be used. A modification is described of the Alvarez test, for estimating the amount of osmic acid in the staining mixture and for determining whether partially exhausted solutions are worth reclaiming.
—C. HORTON SMITH.

SILVER, M. L. (1942). **A Rapid Silver-on-the-Slide Method for Nervous Tissue.**—*Stain Tech.* **17.** 123–127. **755**

S. describes a speedy, simple, and progressive staining method for the demonstration of fine fibres and synaptic endings to the nervous system. With modifications it can be adopted as a specific stain for myelinated fibres. The silver solution used, silver albumose (0·5% protargol), is not new to histological technique but the reducing solution is new and is made up of 1·6% Rochelle salt with traces of $AgNO_3$, $MgSO_4$, and K_2S. The interesting feature of this method is that the silver solution is mixed with the reducing solution. When formaldehyde is used as fixative, fine fibres and synaptic endings are stained a dark brown or black against a light yellow background, after dehydration and embedding in paraffin or celloidin. Myelinated fibres and mitochondria are stained a deep brown when formaldehyde fixation is followed by mordanting in 3% potassium dichromate.—C. H. S.

GROAT, R. A. (1941). **Clearing Tissue with Mixtures of Tributyl and Tri-o-Cresyl Phosphates.**—*Stain Tech.* **16.** 111–117. [Author's summary copied *verbatim*]. **756**

Mixtures of tributyl phosphate (Commercial Solvents Corp.) and tri-o-cresyl phosphate (Eastman Kodak Co.), of varying proportions, may be used as immersion fluids for clearing gross specimens. By varying the ratio of the former to that of the latter (measured volumetrically) from 1 : 130 to 22 : 110, mixtures having refractive indices varying from 1·555 to 1·534 can be made. A table of mixtures and the index of each is given in this paper. Preparation of specimens consists of skinning, eviscerating, fixing, washing, bleaching (when necessary), dehydrating, and defatting. The proper clearing mixture is determined by the immersion method, which entails microscopic observation of a 50μ section of tissue to be cleared.

BASSETT, D. L. (1941). **Preparing Permanent Deep Chamber Mounts of Variable Dimensions.**—*Stain Tech.* **16.** 165–168. [Author's summary copied *verbatim*]. **757**

A rapid and simple method for the preparation of permanent deep chamber mounts of variable size, shape and depth is described. The chamber sides are made with aluminium wire bent on a form of the proper size and shape. Aluminium wire is nicely adapted for use due to its pliability and clean appearance. It undergoes no apparent change in contact with the mounting medium. Depth of the chambers is determined from the gauge of the wire. Clarite, used as the mounting medium, is prepared as a thick solution in toluol (70–75% of clarite by weight). The resulting preparations are crystal clear, colorless, and according to the work of other investigators, do not become acid with age.

SCHWARZMAIER, E. (1942). Ein Gerät zur chemischen Untersuchung der Stalluft. (Giessener Verfahren). **[Apparatus for Chemical Examination of Stable Air (Giessen Method)].**—*Z. InfektKr. Haustiere.* **58.** 199–204. **758**

Description of a portable apparatus for the determination of NH_3, H_2S, and CO_2 in stable air. The apparatus is a modification of an arrangement described by TRAUB (1934) and its chief advantages are claimed to be greater stability and simplicity in use.—H. B.

DUFFIE, D. H. (1942). **Elimination of Color from Visual Haemoglobinometry.**—*J. Amer. med. Ass.* **119.** 493–494. **759**

Description of a new colorimetric method for estimating haemoglobin, based on the fact that green light is absorbed by red. D. uses a micro-colorimeter in which Hb percentage can be read directly from a scale.—J. E.

MULLIGAN, R. M. (1941). **Quantitative Studies on the Bone Marrow of the Dog.**—*Anat. Rec.* **72.** 101–108. **760**

A technique is described which may be utilized for serial biopsy of the bone marrow in the dog. A 2-5 cm. section of any rib from the 8th–12th is exposed under nembutal anaesthesia, and a segment well away from the costo-chondral junction is resected with small bone forceps and placed in physiological saline: it is later squeezed on to a glass slide, and the exudate emulsified with homologous plasma and spread on to other slides. The remainder of the segment is then decalcified and sectioned.

Detailed results of the examination of smears obtained from 35 adult dogs and four puppies are given.—ALASTAIR N. WORDEN.

KÖBE, K. (1941). Beitrag zur Hygiene in der Schweinezucht. **[Hygiene in Pig Raising].**—*Berl. Münch. tierärztl. Wschr.* August 8th. 381–383. **761**

A review article giving a number of facts concerning the distribution of piglet influenza in Germany and discussing modern tendencies in the housing of pigs. The possible applicability to German conditions of the moveable hut system employed in Great Britain and described by RIKARD-BELL [(1937). "The Handbook of Modern Pig Farming". London: H. F. & G. Witherby Ltd.] is discussed. The objection raised by many German farmers on the grounds that a system of this nature would utilize too much land is answered by the statement that losses would be considerably fewer if more satisfactory housing were adopted, and that the initial number of piglets farrowed could be reduced.
—ALASTAIR N. WORDEN.

WAGNER, K. (1941). Das Schwein im Stallhygienischen Grundversuch. **[The Housing of Pigs].**—*Berl. Münch. tierärztl. Wschr.* May 30th. 265–267. **762**

A description is given of some preliminary experiments devised by W. as a result of his contention that the animal itself should be allowed the chance to exhibit preference for some system of hygiene. Four small pig houses were erected, a straw hut of the Lohmann type, two wooden Nebraska type huts such as are seen in the Mid-West (U.S.A.), and one a specially constructed brick building, lined completely with cement and termed a "*Bunker*". A litter which was farrowed in the *Bunker* failed to thrive properly after the sixth week and developed skin lesions ("rust"). When, subsequently to weaning, this litter was given the chance of utilizing any of the three types of hut, its members all chose to use the Lohmann hut, and were occasionally seen to enter the Nebraska hut (in which there were two gilts from another litter), but carefully avoided the *Bunker*. Under these conditions, general health improved and the skin lesions quickly disappeared.
—ALASTAIR N. WORDEN.

KUDRYAVTSEV, A. A., & KOMAROV, N. M. (1939). Metod prizhiznennoyo vzyatiya krovi iz serdtsa loshadi. **[Method for obtaining Heart Blood from Horses during Life].**—*Sovyet. Vet.* No. 6. pp. 49–51. **763**

A method is described by which blood can be obtained from the heart during life by means of a cannula passed down the jugular vein into the heart. The right jugular vein is exposed by an incision. By this technique, arterial blood was also obtained through the carotid artery. [The reason for adopting this method of collecting blood is not clear.]—E. R. PARISER.

ALLEN, F. M. (1941). **Auscultatory Blood Pressure Method for Dogs.**—*J. Lab. clin. Med.* **27.** 371–374. **764**

A. states that the best method of estimating blood pressure in dogs is probably that of subcutaneous arterial puncture by a method described by HAMILTON, BREWER & BROTMAN [(1934). *Amer. J. Physiol.* **107.** 427]. He considers that when it is necessary to make numerous daily estimations over long periods a better picture of the general condition can be obtained by the use of a sphygmomanometer kept in position throughout the period of observation, than by a smaller number of exact determinations which may vary from hour to hour. An adapter of dental gutta percha, moulded in hot water to fit, is inserted around the thigh or fore arm, and a cuff wrapped around it. Readings are taken by means of a stethoscope attached to a flat bell which is placed under the lower margin of the cuff. Sounds may be unobtainable in some states of anaesthesia, hypotension, or weakness, and shivering or panting may interfere seriously with results. [See also *J. Metabol. Res.* **4.** 431. (1923).]
—H. V. HUGHES.

See also absts. **506**, **507** (mastitis), **508** (anthrax), **512** (TB.), **520** (Johne's disease), **540** (clostridia), **616** (mites), **618**, **631** (helminths).

REPORTS

GREAT BRITAIN. (1941). **The Edinburgh and East of Scotland College of Agriculture. Report on the Work of the College for the Year ending 30th September 1941.** [SHEARER, E.] pp. 42. Edinburgh: The College. [8vo]. **765**

The results are given of the year's observations on the occurrence of MASTITIS in about ten cattle herds examined over a period of many years; results are described of miscellaneous work on the cultural diagnosis of mastitis. [For appreciation of the findings the successive annual reports should be read together.]—J. E.

ISLE OF MAN. (1941). **Report on Animals and on the**

Administration of the Cattle Diseases (Prevention) Acts, the Cattle Subsidy Schemes, and the Fat Stock (Regulation of Sale) Orders, together with the Agricultural Statistics for the Year 1940. pp. 15. Douglas: Norris Modern Press. [4to]. **766**

LIVESTOCK DISEASES.—110 bovine animals were reported under the Tuberculosis Order, 1929, and slaughtered. Statistics relating to this work are given for the years 1933–40. In addition 71 cases of generalized TUBERCULOSIS were found in slaughtered cattle, also 10 cases of TB. in pigs. MASTITIS was detected in 153 cows; CONTAGIOUS ABORTION was diagnosed in nine herds and ACTINOBACILLOSIS in 18 cattle: otherwise there were no diseases of note to report. Statistics on 18 of the most prevalent diseases of domestic animals are given for 1931–40.

ANIMAL HUSBANDRY.—Particulars are given of the livestock census, breeding schemes, import, and export. In 1940 there were on the island 3,517 horses, 19,565 cattle, 83,623 sheep and 5,234 pigs.

VARIOUS.—The nature of the work of the government veterinary inspector is outlined, and the good results of an experiment with phenothiazine in lambs are reported.—J. E.

NORTHERN IRELAND. (1942). **Investigations by the Veterinary Research Division, Ministry of Agriculture [1941-42].** [LAMONT, H. G.]—*Rep. agric. Res. Inst. N. Ire., 1941–42.* pp. 18–19. **767**

It is stated without detail that an experiment, begun in 1938, on the immunization of heifers against BRUCELLOSIS by a dead vaccine failed to demonstrate any appreciable advantage in the control of the abortion rate.

In June 1941 a new experiment with strain 19 was begun.—J. E.

EIRE. (1941). **Dublin County Council. Report of Chief Veterinary Officer—County Health District [1940].** [FLYNN, J. A.]—*Rep. med. Offr Hlth Dublin, 1940.* pp. 40–68. **768**

STAFF.—The veterinary department of the Dublin County public health service was founded in 1933. During the year under review it consisted of one full-time chief, and four part-time, veterinary officers, assisted by four sanitary inspectors.

MILK AND DAIRY INSPECTION.—The work done was related to the Milk and Dairies Act, 1935, and its subsidiary regulations, the most important of which refer to milk grading into three categories, *viz*, "highest grade" (tuberculin tested), "standard", and "pasteurized". The number of registered herds was 526 with 8,700 cattle. Each herd was examined at least twice in the year (most three times), special attention being paid to MASTITIS and TUBERCULOSIS. 190 cases of mastitis were detected in 1940, whilst 14 samples were examined for tubercle bacilli, one being positive. Examinations for TB. under the Bovine Tuberculosis Order of 1926 detected three cases.

In 1940 there were 31 herds supplying highest grade milk. Data on the number of cows and on milk quality are lacking as part of the supervisory work was carried out by the department of Local Government and Public Health, but details of the results of this work could not be obtained for insertion in this report.

MEAT AND SLAUGHTER-HOUSE INSPECTION.—The general conditions were unfavourable owing to the large number, and poor hygienic condition, of the small slaughterhouses and to inadequate staff; nevertheless the veterinary officers were able to examine P.M. during the year about 1,400 cattle, 7,000 sheep and 40 pigs and the sanitary inspectors 1,300 cattle, 6,000 sheep and 46 pigs. [No estimate of total numbers slaughtered.] The total carcass condemnation figures were very low, being about 25 cattle, one sheep, and one pig. Figures for carcass parts and organs are also given.

DUTIES UNDER DISEASES OF ANIMALS ACTS.—FOOT AND MOUTH disease last appeared in 1928, ANTHRAX in 1930, SWINE FEVER in 1934, RABIES in 1934, and MANGE in cattle in 1935. There were ten outbreaks of SHEEP SCAB in 1940. Orders for compulsory dipping exist but were troublesome to enforce: about 46,000 sheep were dipped. Ox-warble flies are controlled by an order of 1936 and compulsory treatment is carried out with the aid of lay inspectors appointed for the purpose; the inspectors' work was not uniformly satisfactory and this is referred to in the report. Figures are given for inspections of cattle and numbers found infested, but these give no indication of the totals of animals involved. —J. E.

AUSTRALIA, NEW SOUTH WALES. (1942). **Live Stock Diseases Report 1940/41.** [HENRY, M.] pp. 4. [fcp] [Mimeographed]. **769**

Approximate figures for the most important diseases were as follows. ANTHRAX, 24 outbreaks, 56,000 quarantined, 726 deaths in sheep, 72 in cattle. BOVINE CONTAGIOUS PLEURO-PNEUMONIA, 10,000 involved, 426 deaths. TICK FEVER, 52 outbreaks; 2,400,000 cattle, 13,000 working bullocks, and 24,000 horses dipped (some dipped more than once) as well as other animals. SHEEP LICE, 222,000 sheep quarantined; SHEEP KED, 205,000 sheep quarantined. BRUCELLOSIS-free Herd (Swine) Scheme, 2,800 pigs on government institutions tested, 23 positive reactors. TUBERCULOSIS (Sydney and Newcastle areas), 34,000 tested, 428 positive reactors; 8·2% of 634,108 swine slaughtered, were condemned on account of TB.

Livestock statistics in March, 1940, were:—horses 534,837, cattle 2,862,653, pigs 451,064, and sheep 54,372,472.—A. W. BANKS.

CANADA. (1941). **Report of the Ontario Veterinary College, 1940.** [MCGILVRAY, C. D.] pp. 36. Toronto: T. E. Bowman. [8vo]. **770**

There were 247 students enrolled during the year. Lists of the teaching staff and of special courses of instruction are given as well as notes on the clinical material and on research projects worked upon. The greater part of the report is devoted to special research and disease control carried out by the staff.

PROGRESS REPORT ON THE CONTROL OF BANG'S DISEASE [MCGILVRAY, C. D., & GLOVER, J. S.].—Under the individual herd plan 41,827 cattle were blood tested and 82% gave negative reactions, whilst under the area plan 11,533 cattle were tested, 90% being negative reactors. Calfhood vaccination with strain 19 was carried out on heifer calves in 105 herds: results were not complete.

NATURAL AND EXPERIMENTAL HAEMORRHAGIC SEPTICAEMIA IN SWINE [SCHOFIELD, F. W., & INGLE, R. T.].—After discussing published opinions tending to deny the existence of pure pasteurella infection as a cause of acute disease in swine, the authors describe what they regard as acute H.S. in pigs. The fact that swine fever is not endemic in Canada gives weight to their opinion, as infection with that virus could be excluded with certainty. Protocols of experiments made to set up acute H.S. in healthy pigs are given: anomalous results were obtained as only a very few of the animals developed illness resembling natural H.S.

REPORT OF THE CLINICAL DEPARTMENT [MCINTOSH, R. A.].—This section describes cases of lachrymal duct catarrh in a horse, sterility in a cow, white scour in a calf (suggesting avitaminosis A), "stiff lamb" disease (treated with phosphoric acid), congenital goitre in lambs, and hookworm infestation in goats.

REPORT OF THE PROVINCIAL ZOOLOGIST [STEVENSON, L.].—This takes the form of a report on an autopsy service for fur farmers.—J. E.

TRINIDAD AND TOBAGO. (1942). **[Report on] Veterinary [Work, 1940].** [METIVIER, H. V. M.]—*Adm. Rep. Dir. Agric. Trinidad, 1940.* pp. 6 and 14–15. **771**

GENERAL DISEASES.—There was no serious outbreak of animal disease in 1940. One case only of ANTHRAX was recorded. Routine testing revealed 32 cases of TUBERCULOSIS and nine others were found among animals slaughtered at abattoirs. BOVINE CONTAGIOUS ABORTION was diagnosed only among dairy herds. Pure-bred imported animals are more susceptible than cross-bred stock to PIROPLASMOSIS, but young imported cattle acquire a natural immunity. There were fewer cases of STRANGLES and EQUINE INFLUENZA and there were no outbreaks of EQUINE ENCEPHALOMYELITIS. There were no outbreaks of SWINE FEVER. No domesticated animals were infected with PARALYTIC RABIES (bat-transmitted); the bacteriologist found only four of 1,500 bats examined to be infected. It is thought that flies spread CONTAGIOUS OPHTHALMIA among calves and that when animals are overcrowded this is more likely to occur.

IMPORTATIONS OF ANIMALS.—These totalled 22,010, including 6,852 pigs, 6,529 goats, 5,696 cattle, 2,744 sheep and 162 equines.

QUARANTINE STATION.—6,413 animals were admitted. 378 received ANTHRAX vaccination and 135 were tuberculin tested.

RESEARCH.—The government bacteriologist investigated the virus of bat-transmitted PARALYTIC RABIES. Dogs proved resistant to infection through the bites of infected *Desmodus* bats.—J. A. GRIFFITHS.

U.S.A. (1941). **Report of the Secretary of Agriculture 1941.** pp. 245. Items of veterinary interest pp. 211–215 and 236. Washington, D.C.: Superintendent of Documents. [8vo] [25 cents]. **772**

This report reviews the year's work and research on agricultural questions. The section on nutrition and physiology contains miscellaneous information on matters of interest to veterinarians concerned with dairy cattle, *e.g.* physiology of reproduction and lactation, vitamin requirements, etc. Outstanding animal disease subjects are referred to briefly.—J. E.

U.S.A. (1942). **Los Angeles County Live Stock Department, California. Annual Report for the Fiscal Year Ending June, 1942.** [HURT, L. M.] pp. 63. [4to] [Mimeographed]. **773**

This report contains as usual detailed information of the livestock industry and disease control work, with extra notes on the effects thereon of war conditions There was a fear that bovine PIROPLASMOSIS might be serious, as the vector ticks, *Boophilus annulatus*, were found to be present on cattle imported into the county; this necessitated energetic control and quarantine work. Ticks but no piroplasms were, however, found, and the ticks were eradicated, partly by pressure spray treatment of the cattle, an innovation and a substitute for dipping. —J. E.

U.S.A. (1941). **New York State Department of Health. Annual Report of the Division of Laboratories and Research, 1941.** [WADSWORTH, A. B.] pp. 117. Albany, N.Y.: State Dep. Health. [8vo]. **774**

The only routine diagnosis work done on animal disease was the examination of dogs' brains for RABIES: 1,316 heads were received, but the number of positives is not recorded.

In the course of research into human diseases, particularly on improvements in diagnosis and specific therapy, much of comparative veterinary interest is reported, such as the following items:– the finding of PSITTACOSIS antibodies in four out of 22 normal pigeons, the preparation of improved antigens against virus diseases (VACCINIA), studies on blood coagulation, bacterial growth and metabolism, ultrafiltration, sugar estimation, micro-analysis of body minerals and of drugs, spectro-photometric analysis, disease in laboratory mice (a new disease of unknown cause, characterized by liver necrosis), sulphonamide therapy of rabbit coccidiosis (unfinished work), production of antisera, pharmacology of sulphonamides, effect of surface-active agents on rabies virus with a view to their use as attenuating agents (unfinished), and bacteriological diagnosis of salmonella infections.

A numerical classification system for museum specimens is given, being arranged on an anatomical basis.—J. E.

EGYPT. (1942). **Ministry of Agriculture. Veterinary Service Annual Report 1935-1936.** [FARID, A.] pp. 81. Bulâq, Cairo: Govt. Press. [8vo] [P.T. 5]. **775**

DISEASES OF ANIMALS.—Cases of disease detected during the year are tabulated but it is not clear whether the figures represent single cases or outbreaks of disease, neither is it always clear which species of animal is involved.

Fifty cases of ANTHRAX are recorded; no case of BLACKLEG was detected. Comparison with figures for the previous year shows marked increases in the incidence of PULLORUM DISEASE, FOOT AND MOUTH DISEASE, FOWL PLAGUE, SWINE FEVER, MANGE (type and species of host not specified), and SHEEP POX. Some increase is also noted in the incidence of BOVINE CONTAGIOUS PLEURO-PNEUMONIA, CONTAGIOUS ABORTION, and FOWL POX. Diseases showing some decline in incidence were FOWL CHOLERA, GLANDERS (11 cases), HAEMORRHAGIC SEPTICAEMIA, SPIROCHAETOSIS, and STRANGLES. 106 cases of RABIES occurred. 4,615 cases of TUBERCULOSIS (presumably bovine) were recorded. No case of RINDERPEST occurred: 124,936 double inoculations were carried out against this disease.

VETERINARY LABORATORY.—This section of the report deals principally with routine diagnosis. 6,103 blood smears were examined and 9,666 blood samples subjected to agglutination tests. 290 autopsies were performed and various bacteriological examinations carried out. Certain biological products were prepared.

SERUM INSTITUTE.—The chief work undertaken by the institute was the preparation of anti-RINDERPEST serum. The law in Egypt requires serum-virus inoculation of all cattle and the enforcement of this law has led to successful control of the disease. For the production of virulent blood, susceptible cattle are imported from Cyprus. Serum is normally prepared from Egyptian bulls. Over 60,000 doses of serum were produced during the year. The institute also prepared sera against HAEMORRHAGIC SEPTICAEMIA (bovine and equine), TETANUS, STRANGLES, FOWL CHOLERA, and FOWL TYPHOID. Tests on RINDERPEST vaccines showed that spleen vaccine remained potent after eight months in the ice chest; lymph-node vaccine was still potent after three months. A vaccine prepared from liver alone was not as effective.

ANIMAL BREEDING SECTION.—Statistics are given.

POULTRY BREEDING SECTION.—State poultry farms have been established at three centres with the object of improving local poultry breeds.

The report concludes with statistics relating to livestock census, imports of frozen meat and of livestock, and animals slaughtered.—H. E. HARBOUR.

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